AMERICAN VETERINARY REVIEW.

DECEMBER, 1900.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

THE "REVIEW" GREATLY STRENGTHENED.

Beginning with the current number, Robert W. Ellis, D. V. S., of New York City, becomes a one-third owner and assumes the sole business management of the AMERICAN VETERINARY REVIEW.

As a teacher at the New York-American Veterinary College; as Secretary of the Veterinary Medical Association of New York County for more than five years; as an enthusiastic, earnest and successful practitioner; and as a conscientious and high-minded gentleman, he is so well-known to the readers of the REVIEW that no further announcement than that contained in the opening paragraph of this article is necessary to assure them that a most valuable acquisition has been secured, and that henceforth there will be a great amount of business principles and energy infused into the management of this publication—a department which has been persistently sacrificed upon the altar of economy—and they may now confidently anticipate a more welcome and interesting monthly visitor than they have ever had.

Prof. Liautard will continue in the capacity of senior editor, and his admirable scientific editorials and translations will regularly appear as in the past, as the first and freshest thoughts of the brightest minds of Continental Europe. Dr. Bell retains all of his functions as the home editor—collecting, classifying, and compiling the contributions of its numerous collaborators and

correspondents, and using his utmost endeavors to make the REVIEW of value and interest to the profession. His private practice has so curtailed the time that should have been bestowed upon the details of the business management of the REVIEW that the latter has suffered much in consequence; but with the advent of Dr. Ellis, his burdens will be greatly lightened and the quality of his journalistic efforts much increased.

All correspondence relating to business matters, subscriptions and payments should be addressed to Dr. Robert W. Ellis, 509 West 152d Street, Borough of Manhattan, New York City, and communications for publication or in relation thereto, are to be addressed to Dr. Roscoe R. Bell, Seventh Avenue and Union Street, Borough of Brooklyn, New York City, while those desiring to reach Prof. Liautard personally can do so by directing their letters to 14 Avenue de l'Opera, Paris, France. Correspondents and others will please make a note of the addresses, which will insure prompt service.

ATLANTIC CITY WINS CONVENTION OF 1901.

The Executive Committee of the American Veterinary Medical Association has decided to accept the very earnest invitation of Atlantic City, N. J., as the place for holding the annual meeting of next year, and the veterinary hosts will gather at this beautiful seaside resort next September to partake of the feast of reason which is yearly prepared through the concerted efforts of the members. While a programme of pleasure is not the incentive which brings them from far and near, it is not by any means an objectionable feature to strike tents amidst pleasant surroundings, where the short respite from the active and arduous demands of every-day practice may invigorate and refresh the system as well as enlighten the mind. With such natural advantages as is possessed by this popular resort, the committee of entertainment need add but little beyond that warm welcome which the sons of Jersey know so well how to extend. New Jersey's claims upon the association for the meet-

ing in the first year of the new century were very strong. For nearly forty years her sons have been a powerful column in the work of the national organization, and in the years when the association was distinctively an Eastern body, its membership being confined to a narrow strip of country along the Atlantic seaboard—meeting one year in New York, the next in Boston, and again in Philadelphia—New Jersey was always passed by, and, strange as it may seem, there was never a meeting held within its borders. For years, also, it has struggled with the associational problem, being split into factional societies, pulling in opposite directions, and none of them being truly representative of the profession of the State as a whole. With a spirit of harmonious unity worthy of emulation in every State, and under the intelligent leadership of our own Lowe, these warring factions were last year cemented into one great, strong, and glorious State association, powerful to guard the interests of the profession of the commonwealth and to wield a mighty influence in that of the nation. The REVIEW feels that the decision just reached is a fitting recognition of the claims of New Jersey upon the National Association, and believes that the latter will find profit and pleasure within her hospitable borders.

HARVARD TO CLOSE ITS VETERINARY SCHOOL.

We regret to find the following dispatch in the New York *Times* of Nov. 21:

CAMBRIDGE, MASS., Nov. 20.—Because of the successive annual deficits in the accounts of the Veterinary Department of the University the corporation of Harvard has decided to receive no more students for that department, but the students already in the school will be given sufficient instructions to obtain their degrees.

One of the first, if not the very first, of the great universities to hold forth a helping hand to a science which at the time was sorely in need of recognition and assistance by such high authority, the profession may well feel keen regret at the decision which has been reached by the Corporation of the University. It was never a self-supporting department, we believe, but has

persisted in its instructions largely through patriotic motives, and in the hope that its efforts would finally receive sufficient appreciation to be financially successful.

After the above was in type we wrote to Director Lyman, asking fuller particulars of the announcement, as it had been widely published, and the following reply was received, which we are more than pleased to print in full, since a strong hope is held out that the school may yet go forward even upon a stronger basis than ever:

HARVARD UNIVERSITY, SCHOOL OF VETERINARY MEDICINE,
50 VILLAGE ST., BOSTON, Nov. 30, 1900.

Dear Doctor Bell:

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It is true that on the 12th of this month the Corporation of Harvard College voted that notice should be given that no new students in veterinary medicine will be received by the University until further order of the President and Fellows; but that the instruction to students now in the school should be completed, so far as any of them may desire, until the entire course has been given—that is, until June 30th, 1903. You will see that this vote does not necessarily contemplate the closing of the school even in 1903, and therefore differs materially from the statement which you have copied from the New York *Times*.

The facts are, shortly stated, as follows: This school has never received any endowment whatever; as a result of this it has, of course, been impossible to give the quality of instruction, which is deemed desirable, within its income; the annual deficits have therefore, until now and for the last 18 years, been paid by the University, and we feel that unless endowment can be raised, from which the school may be placed upon something nearer a self-sustaining basis, it will be better for us to give up the further teaching of Veterinary Medicine; but I am far from being without hope that this desired endowment will not be raised before our organization will have been given up in 1903.

When first organized the school had a definite plan of procedure mapped out, which has been followed, up to this time, by good results: its further development will necessitate, by probably lessening the number of students for a time, a still larger annual deficit. Under these circumstances, the school feels it prefers to stop, if it must, where it is, rather than to go forward upon an insecure foundation.

Yours very truly,
CHARLES P. LYMAN, *Dean.*

IF the approaching session of Congress does not pass the Veterinary Section of the Army Reorganization Bill, it will not be the fault of the Army Committee of the American Veterinary Medical Association, for it has inaugurated a campaign of edu-

cation among the members of the lower house, where the bill is pending, of the most thorough and effective nature, and the arguments used are so manly and convincing, that it would seem that no fair-minded man could withhold his support from the measure. The amount of work involved upon the part of the Committee has been enormous, taking in the whole country, and acting through the personal appeals of each Representative's veterinary constituents. We hope and believe that the small task asked by the Committee of the various veterinarians whom they have addressed—the labor of which has been done by the Committee in advance—has already been complied with, and that sufficient pledges have been secured to guarantee the passage of the bill.

THE NEW YORK STATE VETERINARY COLLEGE sustained serious loss by fire on the morning of the 13th ult., but, phœnix like, it arose immediately from its ashes, and resumed its functions with little inconvenience to the students. Director Law has furnished us with the details of the conflagration, which will be found elsewhere.

THE first section of a valuable contribution to veterinary literature appears elsewhere under the title of "Prophylaxy of Infectious Diseases of Domestic Animals" from the pen of the versatile Nocard, translated by Prof. Liautard. It will be completed in the January number.

DR. E. L. VOLGENAU, B. A. I., has been transferred from New Haven to Buffalo, and is commissioned to make tuberculin tests of Canadian cattle intended for this side of the line on the farms where they are owned. He should be addressed at Live Stock Exchange Building, Buffalo. He will visit any point in Canada when his expenses are paid by the owner of the cattle to be tested. This affords opportunity to have cattle tested at home under natural conditions and is a great improvement over the former system.

ORIGINAL ARTICLES.

PROPHYLAXY OF INFECTIOUS DISEASES OF DOMESTIC ANIMALS.

By Prof. Ed. Nocard,* France.

Gentlemen :

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In the narrow sense of the word, prophylaxy means the prevention of diseases. To apply prophylaxy is to put in practice the proverb, "prevention is better than cure." This is better in every way, because there are diseases which are incurable, or rarely cured, because even in cases of recovery the owner always stands a loss, varying with the duration of the disease, the depreciation it involves and the expenses of treatment, and finally with the often considerable number of animals affected. It is such that such disease, not serious by itself, because it very seldom kills, and is cured in a few days or a few weeks; fever, for instance, is in reality, to the economical point of view, more serious than rinderpest, with which 90 per cent. at least of the affected animals die; it is because aphthous fever spreads with frightful rapidity; few animals escape contagion, and the loss, proportional to the number of affected individuals, reaches enormous figures.

All infectious diseases do not develop in the same way. Hence the methods to control them are numerous and varied.

The first condition to carry out good prophylaxy is to know how the disease develops: "*Sublatus causa tollitur effectus.*" To suppress the cause it must be known, and when it is it becomes more or less easy, more or less completely suppressed.

Let us take, for example, malaria of man, also known as intermittent fever, paludism. This is a disease known from time immemorial. Until recent years its nature was unknown. It is known now that it develops in the neighborhood of ponds, or

* Extract from *L'Ingenieur Agricole de Gembloux.* Translated by A. Liautard.

of stagnant water in marshy regions. And, without knowing exactly the intimate cause of the disease, prophylaxy was carried out by drying off the marshes; but it was always a costly and often impracticable operation. But numerous dangerous regions have been thus made healthy.

Then, empirically, by a fortunate hazard it was learned that when the disease existed it could be cured by quinine. This was administered first in the shape of pulverized cinchona bark, then in that of salts, saltpetre or muriate of quinine.

For a long time it was not known how quinine acted. Since then the parasitic nature of malaria has been recognized, and to-day it is well known that quinine acts in destroying the parasite, not under all its forms, or in every stage of its evolution; it reaches it when it proliferates, when it gives birth to new legions of parasites. These beings, all in a condition to come to life, are destroyed by quinine.

In times gone by it was believed that marshes were dangerous from the emanations or effluvia arising from them which were transported by the air. To-day we know that it is not the air which carries the germs of the disease. Marshes are dangerous because they are excellent media of culture for mosquitoes, and that it is by them that paludism is spread. This point well established, a new means of prophylaxy was indicated: it is to sterilize the marshes, to render them unfit for the culture of mosquitoes, when drainage cannot be applied. This method succeeds very well, when the stagnant waters do not cover too much space, by pouring on their surface a mixture of petrole and tar, which spreading in a thin layer over the water destroys the larvæ of the mosquitoes by preventing them from breeding. The dangers from these insects are thus suppressed.

Finally, when marshes cannot be drained or covered with petrole, one can yet protect himself from malaria in the regions most infested by using mosquito nets, especially during the night, the insect being nocturnal. With a good net one can cross the most infested countries without fear. This is an example which shows how simple prophylaxy is sometimes.

Here are instances taken from the pathology of animals.

Texas fever, or bovine malaria, is a disease widely spread over the globe; central Europe is perhaps the only region free from it.

It is also a disease caused by a parasite of the corpuscles of the blood. This disease, very different from the other, is inoculated to animals not by mosquitoes, but by another insect of the great family of ixodes, vulgarly called *ticks*. It is the tick which with its sting deposits in the blood a small number of parasites which multiply with such prodigious rapidity that in some cases, a few days after this inoculation, the number of red corpuscles, which in a healthy animal is over eight millions to a cubic millimeter, drops to less than one million. All the invaded corpuscles are dissolved, the urine becomes bloody or dark and animals die in a few days. Cattle can be protected by various means. One which seems the simplest would be to stop the importation of animals from the countries where the disease exists; if they are already imported they must be cleaned of the ticks that are on them. Once free from those parasites those animals are no longer dangerous, unless ticks come again on them. Other means can be used to prevent bovine malaria. For instance, infested regions can be made healthy by changing the cultivation of the soil from natural to artificial fields, where it seems ticks cannot develop. Finally, my assistant, Mr. Lignières, has shown that it is possible also to protect cattle by a process of true vaccination.

Another disease unknown in our countries, but which has a certain interest of actuality, is the "Horse Sickness" of South Africa, which did so much harm to the English army at the beginning of the war. Its nature is not known, but it attacks, almost fatally, all the horses which are recently imported into that country. Those which are not acclimated, that are not "salted," as the Boers say, are in general lost; however, if they resist a first attack, they are protected forever and they become very valuable. This disease is not contagious. During the winter the disease can be inoculated to an imported horse and

he will die without communicating the disease to his neighbors in the stable. It is probable that this disease is also inoculated by nocturnal insects. Indeed almost all horses imported into South Africa take the disease; most of them die unless they are brought in at night, before sunset, and are not left out until morning after sunrise. That prophylaxy is not complicated but difficult to carry out while in campaign. These examples show how varied are the means proper to prevent the propagation of diseases.

* * *

Although very varied, these processes, these methods can be collected into three large groups. In the first we will plaee the measures, properly called, of sanitary police; in the second, we will find artificial immunization given by the inoculation of viruses, attenuated or not; finally, in the last, the various modes of serotherapy, preventive or curative, associated with or without the inoculation of the virus or of the vaccine. We shall examine these three groups successively, and I will as we go on show you their application to the medicine of animals.

(1) SANITARY MEASURES.

The fundamental basis of sanitary police is to *isolate* the animals affected with contagious diseases. These affections do not spread except by the direct or indirect contact of diseased with healthy animals. If the sick were strictly separated from the healthy no contagion would occur and the disease would disappear of itself, either because the animals would die or recover. It is understood that the cadavers should be destroyed, and the places which the sick had occupied should be disinfected. Our fathers knew this, and Greek and Latin authors who have written on agricultural subjects and described anthrax (*ignis eacer*) and glanders (*malleus*) recommended not only the isolation of the sick, but also that the cadavers should be buried or burnt.

Those measures are still the base of sanitary legislation in all civilized countries. It is completed by disinfection, in some cases by slaughter of the sick and burning of their cadavers.

Slaughter is justified by this fact, that most of the contagious diseases are principally spread by contact with the sick. When it is dead the danger is much less. There are instances where the cadaver is, on the contrary, more dangerous than the living animal; because it is after death that it contains more germs of the disease. The proverb "dead the beast, dead the virus," is not always true. The cadaver then must be destroyed as quickly and as completely as possible. When it is not easy to obtain a rapid way of destruction, one must be satisfied with burying; but it is indicated to throw the cadaver into special places, true cemeteries for animals, which shall be surrounded by walls or close fences and whose entrance shall be strictly forbidden to other animals. Experience has shown that germs are not always destroyed by burying, and that even after a deep burying it often happens that those germs are brought back on the surface of the earth by earthworms which come and deposit them with their fæces.

Each town ought to have such a cemetery if other more powerful means of destruction are not possible. Evidently it would be better to dissolve the cadaver in sulphur and use the remains for fertilizing purposes. This will be one of the progresses of the future!

Isolation or slaughter of the sick constitute theoretically the necessary and sufficient measure to prevent the spread of a disease. Yes, it is sufficient, providing the effusion is recognized early enough, and that the animal has not communicated it to its neighbors. But it is very rare that the diagnosis is made at the start, before contamination has occurred, and the result is that the sanitary measures cannot relate only to those affected, but also to those which may have already taken the germ of the affection. It is absolutely necessary to keep them isolated, sometimes quarantined; at any rate, prevent their sale; it is by them, indeed, that most often new centres of infection are formed in the stables, in the barns where the hazards of the sale bring them. They are so much more dangerous that free from any visible symptoms they are placed without fear among

healthy animals. That must be prevented. Moreover, there are diseases which are so dangerous that the contaminated must be killed like the sick, so as to suppress as quickly as possible everything that might serve as a vehicle to contagion.

These sanitary measures have for a long time been the base of all prophylaxy. To-day we still have no other means of guarding against certain diseases, rinderpest—for instance, that terror of Occidental Europe. It may be said that the sanitary legislation of all European States prescribes slaughter not only of all the sick but also of all which have had contact with them and may have been contaminated directly or indirectly through them. It is an expensive medical measure, but one which is fully justified. It is because of the great losses resulting from an epidemic against which mild processes are used, and because, after all, the invasion of rinderpest in the countries of Occidental Europe are rare, and finally because when it is applied early and strictly it is entirely efficacious. You know that rinderpest is an almost fatal complication of European wars; armies were followed by immense provision convoys; animals belonging to them are submitted to long journeys; their financial value must be as low as possible; the grey breed of the steppes fulfill admirably those conditions; it is with it that armies in campaign are supplied, but, as in days gone by, rinderpest existed in permanence on the steppes of Hungary and Russia. To the scourge of war was added that of the disease of cattle.

It is not so any longer; rinderpest has disappeared from Hungary and from European Russia; it exists only in the far provinces of Asiatic Russia.

Against these possible infections all measures—severe as they may be—are justified; they are costly, but it is the only expense, and if done at once is an economy, as one is sure that there will be no more disaster.

Remember that in 1866 England lost far more than 100 millions of dollars, for the reason alone that she did not recognize the nature of the disease at the start, and that when it was known she hesitated in the choice of the measures to take; since

England has benefitted by the experiment and has understood the importance of a good sanitary police, we have seen her resort to such severe measures against foot-and-mouth disease.

Aphthous fever, that disease, so mild that it makes animals scarcely sick, prevents them from eating for a few days, perhaps a few weeks, and gets worse so easily. English people, who can count, know that it caused to their agriculture losses far inferior to those of rinderpest, decided to get rid of it, cost what it might. Indeed, foot-and-mouth disease spreads with extreme rapidity by all the modes of contagion, by the animals, by the objects they have soiled, the people, the buyers who go in the barns to examine them, etc.; it recidivates frequently at short epochs. I know barns where it has occurred twice in one year, but this is rare. The possible return of the disease increases, and if one considers that in every great epidemic many animals succumb or must be destroyed, an idea can be obtained of the enormous losses agriculture has to stand. England, knowing all this, with her characteristic resolution, has immediately done all which was necessary to get rid of it. First she closed her ports, and that in a radical way, easily carried out by her insular situation—she does not allow the landing of live animals coming from infected countries. She is protected from a new invasion from outside. From the interior she has adopted regulations and exceedingly strict and minute measures, to which the people submitted without protest.

Those severe measures have succeeded in entirely extinguishing the disease in Great Britain; they would not be so efficacious with us, where land frontiers are more difficult to guard against the importation of diseases of cattle.

Stamping out (the general slaughter of all diseased or contaminated animals) has been applied with no less success for *contagious pleuro-pneumonia*, but with this disease it was not England that applied it first. For a long time the duchy of Baden, Holland, and Switzerland have succeeded in suppressing contagious pleuro-pneumonia. England only imitated them,

and she did it with energy, and in three years succeeded in ridding herself of the heavy tribute she had paid for fifty years to that terrible disease. It has cost much: 14,000 or 15,000 animals had to be killed, but the result was success. We know with what success Belgium has applied the same measures.

During the last few years other countries, Austria and Hungary, have followed the example, and with relatively small expense they have succeeded in suppressing the disease. Thanks to the "stamping out," the slaughter of all the sick or contaminated, completed by strict disinfection, the same result was reached. There is this advantage in these expenses: when once done they do not again occur.

We shall see later on that contagious pleuro-pneumonia can be treated with less expense by different and more scientific methods.

The general slaughter of the sick and of the contaminated is still the bases of the prophylaxy of rabies. In all civilized countries rabies is fought in this way. Rabies develops only from bites; if, then, all the bitten animals were killed immediately after being bitten rabies would soon be extinguished. But in practice this radical measure is difficult to apply; it can never be known what dogs have been bitten by the mad dog. Experience has shown that it is always by dogs running on public roads that rabies is propagated, and the proof of this is that wherever these dogs are not allowed to exist rabies decreases rapidly and drops to insignificant numbers. Slaughter, then, ought to be carried out, not only on those that are bitten, but also on those that are on the public roads. I repeat, wherever this is done, rabies disappears.

We shall see directly that for herbivora which have been bitten the development of inoculated rabies can be prevented.

Stamping out is again the only means that can be applied against *infectious pneumo-enteritis* of swine; this disease develops only by contagion, and so far no means of artificial immunization is known.

General slaughter would be entirely efficacious against *car-*

buncular diseases and *rouget of swine.* These are affections whose germs exist in the ground, and the great sacrifice of a general slaughter would have to be renewed.

Anyhow, we possess other efficacious means to relieve us of the heavy tax these diseases once cost agriculture in a great many countries.

(*To be continued.*)

ANTISEPTIC THERAPEUTICS.

By J. F. Winchester, D. V. S., Lawrence, Mass.

Read before the American Veterinary Medical Association, Sept. 6, 1900.

In presenting this subject it is not necessary to introduce new matter, as new material is very likely to be misleading. Theories have frequently been advanced that have been accepted for a while, but which in a short time have suddenly disappeared. When old material is worked up with the view of showing that it was originally started on sound foundations, then a paper of this kind becomes useful. It becomes useful in another way, for if one can only say something calculated to create discussion and to encourage a free interchange of opinion, thus further good comes from it.

At the outset it is well to bear in mind what is meant by therapeutics and what an antiseptic is.

Therapeutics is that part of medicine which relates to the composition, the application and the modes of operation of the remedies for diseases. It not only includes the administration of medicines, properly so called, but also hygiene and dietetics or the application of diet and atmospheric and other non-medicinal influences to the preservation or recovery of health.

Dr. G. M. Sternberg tells us that by an antiseptic we mean an agent which prevents septic decomposition by preventing the development of the micro-organisms which cause it, and the term is extended to the restraining influence exercised upon other micro-organisms of the same class including the pathogenic bacteria or germs of infectious diseases. Miguel has for-

mulated a table of the value of various antiseptics, the proportion being that in which the agents named permanently prevented the development of any of the micro-organisms floating in the atmosphere, *i.e.*, the organic solution was freely exposed to the air and the test consisted in its permanent preservation from putrefactive changes. If Miguel had protected his solutions from atmospheric organisms and had inoculated them with pure culture of pathogenic bacteria, the results would have been still more favorable, and after a time, which would be different for different bacteria, he would have found that the pathogenic bacteria introduced into his culture media would have lost their ability to grow in a favorable medium.

So, too, in therapeutics, if we can restrain the development of a pathogenic micro-organism, we practically render it harmless, or at least restrict its power for mischief within limits which are compatible with the safety of the patient.

INDICATION.

The term indication is used by the therapeutist as equivalent to "the pointing of nature for relief." The success of the physician depends on his skill in reading the indications. In many instances the indication is not for a single remedy but for several, which by acting together will produce a combined result.

CAUSES.

In studying the cause of an existing disorder for therapeutic purposes, it is first necessary to decide whether such cause has already ceased to act or whether it is still existent and persistent in its influence. When the cause has been a fleeting one, no indications exist in regard to it; when the cause persists, however, the indication is for the removal of the cause: in such a case are we most successful as therapeutists. When we disinfect a wound or destroy a malarial organism by quinine, we carry out the indication for the removal of the cause. The distribution of bacteria is universal. Wherever man, animals or even plants live, die and decompose, bacteria must be present. Notwithstanding their extreme familiarity with the animal

body, there are certain parts of it into which bacteria do not enter, or entering, remain vital for a very short time only, for the body juices and tissues of normal animals are free from them, and their occurrence in these places may almost always be accepted as a sign of disease.

Should the pabulum supplied to bacteria contain an excess of either alkali or acid, the growth of the organisms is inhibited. Most true bacteria grow best in a neutral or feebly alkaline medium. Light will usually attenuate the virulence of pathogenic bacteria. The presence of certain substances, especially some of the mineral salts, in an otherwise perfectly suitable medium, will prevent the development of bacteria, and when added to grown cultures of bacteria, will destroy them.

Bacteria which produce diseases are known as pathogenic; those which do not, as non-pathogenic. Between the two groups there is no sharp line of separation, for true pathogens may be cultivated under such adverse conditions that their virulence will be entirely lost; while at times bacteria ordinarily harmless may be made toxic by certain manipulations or by introducing them into animals in certain combinations.

A microbe having effected its entrance into an animal may grow with such rapidity as to completely block the blood or lymph channels, thus stopping the proper circulation, and disease and death must result. More common than this is a local establishment of the organisms with a resulting inflammation due partly to the pressure of the foreign organisms and partly to their toxic metabolic products. The term pneumonia is a vague one, really comprehending a variety of inflammatory conditions of the lungs quite dissimilar in character. This being true, no one should be surprised to find that a single organism cannot be described as specific for all.

The bacterium which can be demonstrated in at least 75 per cent. of the cases of lobar pneumonia and which is now almost universally accepted as the cause of the disease, and about whose specificity very few doubts can be raised, is the pneumococcus of Frankel and Weichselbaum.

In catarrhal pneumonia the majority of the cases are caused by the presence of the staphylococcus and streptococcus of suppuration. It frequently happens that pneumonia occurs in the course of, or shortly after the convalescence from influenza. In these cases both the influenza bacillus and the pneumococcus are present. Again the pneumococcus and the staphylococci operate simultaneously and produce a purulent pneumonia with abscesses as the conspicuous feature. It was not until 1892, after the great epidemic of influenza, that there was found simultaneously by Canon and Pfeiffer, a bacterium which conformed at least in large part to the requirements of specificity. It cannot be positively proven that this bacillus is the cause of influenza, but from the fact that the bacillus can be found only in cases of influenza, that its presence corresponds with the course of the disease in that it is present as long as the purulent secretions last, and then disappears, and that Pfeiffer was able to demonstrate its presence in all cases of uncomplicated influenza, it follows that his conclusion that the bacillus is specific is certainly justifiable.

The experiments of Delvine and Kole showed that the toxicity of the cultures resides not in a soluble toxin but in the bodies of the bacilli. The outcome of the researches was the total failure to produce immunity, and the subject is as susceptible as before, if not more so.

Recent researches in actinomycosis have changed the view held by some bacteriologists in regard to the actinomyces, and have caused them to regard the organism as a bacillus. If it be a bacillus, the central zone of granular cocci-like elements is to be regarded as consisting of individuals in process of rapid division and spore formation; the mycelial zone as consisting of perfect individuals, and the peripheral zone as consisting of individuals partly degenerated through the activity of the cells and tissue juices. The blood is known to have germicidal properties and these properties have been studied by Von Fordor, who reaches some interesting conclusions. He finds that increased alkalescence of the blood raises its germicidal

power very much. The drugs which do this most effectively are the carbonates of sodium and of potassium. By the alkalinization of the blood of rabbits he made a large per cent. of them refractory to anthrax.

The alkali very frequently used by a great many is potash or some of its salts. The iodide of potass. closely resembles iodine, but is less powerful and devoid of local irritant action. It is an antiseptic. It promotes absorption of morbid products. Professors Thernassen and Nocard trust implicitly to the iodide in actinomycosis. In chronic poisoning with lead or mercury it removes the metals from the tissues and from the body.

Potassium permanganate, although it has not the antiseptic power of corrosive sublimate, effectually destroys bacteria. Goldberg, in summarizing the results obtained by all authors on the irrigation treatment of gonorrhœa, shows 60 per cent. cured within ten days, 30 per cent. within two weeks, while 5 per cent. required a longer period, and 5 per cent. were recorded as failures. The success was brought about by the use of a solution of permanganate of potassium (ordinarily one part to three thousand parts of water), all forms of internal medication and nauseous dosing being done away with.

The volatile or essential oils are mostly of vegetable origin, being found generally in the flowers, leaves, fruit or seeds of plants, but they occur in all parts of the coniferæ. Most are found ready formed, but some, as the hydrocyanated almond and mustard oils, are produced by a species of fermentation. The chemical constitution of the volatile oils differs from that of the fixed oils; most are pure hydrocarbons, with the molecular formula of oil of turpentine (C_{10} H_{16}) and are termed *terpines*. The volatile oils are *antiseptics* and *stimulants*. Oil of turpentine in medicinal doses is an antiseptic and stimulant, especially of mucous and skin surfaces. Like other volatile oils it is an active antiseptic. In destroying bacteria spores Koch found it more effective than alcohol, ether, chloroform or benzol, as no spores germinated after being wet with it for five days. It is eliminated by the lungs; it acts as a stimulant, an

antiseptic and an expectorant, by the skin promoting diaphoresis; by the kidneys inducing diuresis. The camphors, physiologically as well as chemically, are volatile oils. In the form of a fine powder or a solution they are quickly absorbed; they stimulate the brain, spinal cord, heart and respiratory functions and are execreted by the skin and bronchial membrane, and also in smaller amount by the kidneys. They have considerable antiseptic power, Koch having found that one part to 2500 parts of water hindered the development of anthrax bacilli.

The benzol benzene, or aromatic series of carbon compounds, includes a number of antiseptics and antipyretics, viz.: benzene, carbolic acid, creolin, salicylic acid, salol, antipyrin, antifebrin, phenacetin, etc. Creolin has been proved by bacteriological tests to be more prompt and effective than carbolic acid in the destruction of the microbes of anthrax, fowl cholera, glanders, etc. Kaufmann states that as a bactericide it is *ten* times as powerful as carbolic acid, and that a ten per cent. solution does not irritate the skin, even when abraded, nor the mucous membrane. It is inhaled in ozæna, laryngitis, pharyngitis, strangles, bronchitis, gangrenous pneumonia and in purpura. In the form of an injection it is useful in the retention of placenta, metritis and purulent cystitis.

The petroleums or paraffins are hydrocarbons produced by the decomposition of vegetable matter. They are obtained from the destructive distillation of coal, from the bituminous shales and from the oil wells found in various parts of the world. The petroleum distilling over between 300° and 400° F. is chiefly nonane (C_9 H_{20}) and dodecane (C_2 H_{26}) and is used for lubricant purposes.

At higher temperatures there come off hexadecane (C_{16} H_{34}) and other paraffins richer in carbon, constituting such soft solids as vaseline and the soft petroleums; while still higher temperatures produce the hard paraffins. The petroleums belong physiologically to the fatty or alcohol series of hydrocarbons. The petroleum spirit and other paraffin oils, by

virtue of their diffusive, solvent, stimulant and antiseptic actions, are valuable both for external and internal use, the petroleum benzin or petroleum spirit, being used for many of the purposes of oil of turpentine.

Dr. M. M. Griffith asserts that the crude semi-solid petroleum, as it accumulates on the casings about oil wells, is an invaluable remedy in chronic bronchitis and incipient phthisis. Huile de Gabian is a similar product which has long been famous in France as a remedy in lung diseases. Liquid petroleum is much used as a soothing local application in inflammation of the mucous membrane of the nose, throat, larynx, and even bronchial tubes. Iodine is an active antiseptic whether used in the gaseous, liquid or solid state. One part in 4125 parts of water arrests the action of diastase and ptyalin; one part in 7817 arrests the action of pepsin; one part in 7000 destroys both bacilli and their spores (Wernitz and Koch). Structures, whether natural or morbid, may be gradually liquefied and absorbed by its use. Medicinal doses are absorbed; they also stimulate glandular activity and promote metabolism. In the tissues iodine may again be set free and combine with serum albumen, but iodine albuminates are unstable and hence readily removed.

This appears to explain the action of iodine and its compounds in the liquefaction and absorption of pathological products. It is excreted by the mucous surfaces and glands, being found notably in the saliva, perspiration and urine.

Dr. H. L. Jenckes, in his notes on the "Therapeutics of Croupus Pneumonia," refers to a remedy which has been advocated as having a destructive, or at least an inhibitory action on the pneumococcus. This is ethyliodid. He quotes Professor Bortholow, who says: "The influence exerted by it on the cough, the labored breathing and the general malaise is a remarkable fact. It has the single advantage that no apparatus is required; it vaporizes at ordinary temperatures; it causes no irritation of the mucous membrane, and it does not act as an anæsthetic. The cases in which it was used were all apparently

much benefitted by its inhalation, and all expressed a sense of relief to the general malaise and to the specific symptoms, cough, bronchial irritation and expectoration, the last mentioned being soon changed in character and in quantity."

Ethyl iodid should be freely inhaled, not only for its supposed specific effect upon the pneumococcus, but also for the relief it affords the pulmonary symptoms. Compressed air and creosote is recommended by Professor See in apical and fœtid bronchitis, the inhalations to be made daily or more frequently. The results obtained would appear to be surprising, a marked amelioration being observable in most cases. Professor W. L. Williams says that intra-tracheal medication has much to recommend it when rapid effects are desired, especially in those pulmonary diseases where antiseptics are indicated. At the time of writing his article on the subject, he had not met with noteworthy success in treating suppurative bronchitis by intra-tracheal injections of antiseptics, and he was unable to find any record of attempts to administer per trachea for therapeutic purposes, large volumes of liquids either as mechanical detergents or as topical or general antiseptics.

By referring to his article in the VETERINARY REVIEW, Vol. XXI, No. 9, you will find a very interesting account of two cases of traumatic bronchitis treated antiseptically through the trachea.

Dr. Jules Daurial gives his observation of lavage of the whole intestinal tract in eleven infants who were suffering from obstinate fœtid diarrhœa, which checked the disease in all instances. The fluid used was weak solutions of lactic acid and creolin. One case of typhoid fever was treated in the same way with good results. Dr. W. W. Johnson, of Washington, advocates the local antiseptic treatment of acute dysentery from the fact that the affection itself was local, being confined to the colon and the rectum.

The *rationale* of the method was shown in the fact that we had a local inflammatory process with rapid infiltration of tissue; a tendency to ulceration and necrosis and extensive de-

struction; while the decomposition and retention of decomposing solids and fluids in the bowels would result in autoinfection, with also the probable dependence of these conditions upon the introduction of a parasite.

(*To be continued.*)

RABIES AND HYDROPHOBIA.

By D. E. Salmon, D. V. M., Washington, D. C.

A Paper read before the American Veterinary Medical Association, at Detroit, Mich., Sept. 6, 1900.

(*Continued from page 584.*)

THE FREQUENCY OF RABIES.

Passing to the second contention, viz., that rabies is extremely rare, even in animals and that not one case in a million supposed to be rabies is properly diagnosed, let us briefly inquire into the facts. There are certain European countries which keep very accurate statistics of rabies in animals and the official reports of which may be taken as fairly reliable. In Germany these reports show 1202 cases of rabies in animals in 1898, in France 2374 cases in 1899, in Belgium 444 cases. In Great Britain in 1895 there were 727 cases; in Hungary in 1895, 1397 cases.

In the United States unfortunately we do not have general statistics concerning this disease. The writer has recently requested information from the State Veterinarians and from veterinary schools. A number of very carefully prepared replies have been received, which are summarized as follows:

Dr. Charles P. Lyman, School of Veterinary Medicine, Harvard University, Boston, 25 or 30 cases in 18 years. Mentions the case of a policeman in the town of Lynn who was bitten and died.

Dr. W. J. Coates, American Veterinary College, New York, seven cases a year for 25 years.

Dr. H. D. Gill, New York College of Veterinary Surgeons, New York, eight cases a year for three years.

Dr. Wilfred J. Lellman, New York College of Veterinary Surgeons, New York, four cases in his own practice and two in Dr. Gill's in one session.

Dr. Robert J. Wilson, Assistant Bacteriologist, Department of Health, New York, has confirmed the diagnosis during the last three years of 40 cases in domestic animals and three cases in human subjects.

Dr. Leonard Pearson, Veterinary Department, University of Pennsylvania, estimates 300 to 400 cases in 14 years. As State Veterinarian has found a great deal of rabies among farm animals. In many cases diagnosis has been sustained by laboratory tests. In man during last year, two cases in Lancaster, one in Kennett Square, one in Philadelphia, one in Allegheny. Three years ago a prominent veterinarian of Pennsylvania died of rabies.

Dr. J. M. Wright, McKillip Veterinary College, Chicago, from January 1, 1900, to April 5, 1900, had seen 11 cases in the dog and three in the horse. Handles about 20 cases of rabies a year.

Dr. A. H. Baker, Chicago Veterinary College, Chicago, has had in last year about ten cases in horses and 50 in dogs.

Dr. James Law, New York State Veterinary College, Ithaca, N. Y., has had brains of rabid animals repeatedly sent there for diagnosis, from which successful inoculations have been made. He brought a piece of the medulla of Neil, the keeper of the dog pound at Newark, N. J., who died as the result of being bitten by a rabid dog, and inoculated a dog and a number of rabbits, some on the brain, others subcutaneously. All developed rabies. Has the best of evidence of a number of men who died of rabies and from whom inoculation with saliva or brain substance caused rabies in the lower animals.

Dr. S. Stewart, Kansas City Veterinary College, says that 11 or 12 cases have been brought to the hospital within three years, five within one year.

Dr. John J. Repp, Veterinary Department, Iowa State College, says Dr. J. R. Sanders, of Corydon, Iowa, has noted 18

deaths of cattle with rabiform symptoms, seven out of one herd of 50. Medulla of one of the seven was sent to Dr. Repp, who inoculated a rabbit which died in 18 days after suffering four days with gradually increasing paralysis.

Dr. H. J. Detmers, Columbus, Ohio, formerly of the Ohio State University, has seen three cases in dogs and one in a horse since 1893.

The Health Department of Buffalo reports a recent outbreak, not yet entirely over, in which it investigated on complaint 45 cases in dogs, and that in addition 74 cases of dumb rabies and 41 of furious rabies were brought to the pound. Animals other than dogs to the number of 27 were affected, and four persons died of the disease. Rabbits and dogs were inoculated experimentally and died of the disease.

Dr. A. W. Bitting, Veterinarian of the Indiana Agricultural Experiment Station, reports one outbreak some years ago. Two or three dogs and several sheep and hogs belonging to the station were affected. One year ago one dog, seven horses and eight cattle died; this year, one dog.

Dr. C. A. Cary, Agricultural and Mechanical College, Alabama, states 24 cases have been observed there.

Dr. J. W. Scheibler, State Veterinarian, Tennessee, has seen about 20 cases.

Dr. George H. Bailey, State Veterinarian, Maine, had one case of dumb rabies in his practice in 1892. States that the Maine General Hospital had one case in a young man several years ago.

Dr. A. W. Clement, State Veterinarian, Maryland, reports about 30 cases brought to his attention officially.

Dr. Samuel S. Buckley, Veterinarian of the Maryland Agricultural Experiment Station, reports that at College Park, Maryland, several years ago, a collie dog bit three cows, a calf and a cat, all of which developed the disease.

Dr. Cooper Curtice, State Veterinarian, North Carolina, reports having noted one case in the human subject since he has been in that State.

Dr. W. H. Dalrymple, Louisiana State University and A. & M. College, has seen one typical case in a horse and at least half a dozen in cattle. Was informed by Dr. J. W. Dupree, Surgeon-General of the State, that the latter has had three cases in the human subject in his practice. In all cases the dogs which did the biting were preserved and died after showing characteristic symptoms of rabies.

Dr. F. A. Bolser, State Veterinarian of Indiana, reports three outbreaks of rabies in six years, affecting horses, mules, cattle and hogs. Two young men were bitten, badly lacerated, and died in great agony.

Dr. H. P. Clute, State Veterinarian, Wisconsin, reports 14 cases in dogs, sheep, cattle and horses. Rabbits inoculated at the State Experiment Station from the brain of a dog died of rabies in 18 and 19 days. Others inoculated from brain of calf died of rabies in 21 and 22 days.

Dr. A. T. Neale, Director Delaware Agricultural Experiment Station, mentions death from rabies of three or four cows in one herd. Dogs and rabbits were inoculated from the medulla of one of these cows and developed the disease. A dog at the station which was bitten by a strange dog became affected with rabies. Diagnosis was proved by inoculating rabbits. One case in a horse, not tested by inoculation.

Dr. M. E. Knowles, State Veterinarian, Montana, has seen about 60 cases of rabies in fifteen years, of which 53 were brought to his attention officially.

Dr. J. W. Elliott, State Veterinary Surgeon, South Dakota, has had as many as 100 cases brought to his attention in the last two years, mostly in cattle, and the disease could be traced to the bites of affected dogs.

Dr. G. T. Seabury, State Veterinarian, Wyoming, has seen three cases in dogs. Knows of a case in man caused by bite of a skunk.

Dr. Sol Bock, State Veterinary Surgeon, Colorado, has seen at least 50 cases in the last year.

Dr. Paul Fisher, Kansas State Agricultural College, reports

a case in a horse in 1897. Rabbits inoculated died in 30 days of rabies.

Dr. A. T. Peters, Animal Pathologist, University of Nebraska, reports about eight different outbreaks recorded there. In one outbreak a dog bit several other dogs, a cow and a horse. The cow was qnarantined and died 31 days afterwards of rabies. The horse was but slightly wounded and developed rabies after about 200 days.

Dr. L. L. Lewis, Department of Veterinary Science, Oklahoma Agricultural and Mechanical College, states that two cases of rabies have come under his observation since he has been in that position.

In the District of Columbia the first investigations by the Bureau of Animal Industry were made in 1893; they were discontinued during 1894, and were taken up again in the fall of 1895, since which time cases of canine rabies have been demonstrated every year. There have been sent to the laboratory by the Health Department a number of dogs each year that were suspected of rabies. As all such cases which have occurred have not been sent to the laboratory, it cannot be said that we have discovered all of the cases of rabies which have occurred. The number of demonstrated cases of rabies in dogs in the District of Columbia is as follows: 1893, 11; 1895, 2; 1896, 5; 1897, 3; 1898, 7; 1899, 19; 1900, to July 31, 29. This gives a total of 76 cases in dogs. All of these cases have been tested by inoculation and have given positive results. In addition to these figures a certain number of other animals have died of rabies.

Seven deaths of persons from rabies are recorded by the Health Department of the District of Columbia since 1877. In two cases the diagnosis was proved by rabbit inoculations.

These figures do not indicate that rabies is such a rare disease as is alleged. So far from its being true that not one case in a million supposed to be rabies is really that disease, we have found more cases of rabies than were supposed to occur —not even the most sensational newspapers in our city have

had as many reports of rabies in dogs as were actually found by these tests.

THE DIAGNOSIS OF RABIES.

The question has been raised as to whether the tests by the inoculation of rabbits and guinea pigs on the surface of the brain with emulsions of the medullas of suspected animals is a reliable indication of the existence of rabies. The editor of one of our veterinary journals says: "Is it not about time to give this subject a rest until more real scientific work is done in this field of research and some more accurate work completed beyond those tests on rabbits and guinea pigs, so lacking in conclusiveness to a majority of scientific minds?"

It certainly must be well known to the writer of that editorial that any doubts as to the reliability of the test by inoculating rabbits and guinea pigs may be very easily dispelled by returning to the old method of inoculating large animals in the skin or muscular tissue with the saliva or with the brain or spinal cord of affected individuals. The experiments recorded by Zinke, Count Salm, Berndt, Hertwig and Rey, which are quoted above, show with what certainty the saliva of rabid dogs produces rabies in dogs and sheep. These experiments have been repeated and confirmed by numerous investigators in recent years. It is not necessary to use emulsified medullas to obtain positive results; it is not necessary to inoculate intracranially; it is not necessary to use rabbits and guinea pigs. This method has simply been adopted for ordinary use because of its convenience and because it produces disease in a maximum number of subjects after a minimum period of incubation. The reliability of the method has been abundantly proved and the results correspond both with the post-mortem indications and with inoculations of larger animals in the skin and muscles. Those who habitually use small animals, inoculating subdurally with medulla emulsion as a test, and who have from time to time confirmed their results by inoculating larger animals by various processes, have confidence in this method. Would it not be well for those who lack experience to arrange to have

some comparative trials of different methods made before they discredit modern science and modern laboratories by publicly expressed doubts? Moreover, the facts do not warrant the statement that the method of diagnosis in general use is lacking in conclusiveness to a majority of scientific minds.

Permit me to relate briefly a typical case of rabies which occurred in the District of Columbia. A dog broke the chain with which he had been fastened and escaped from its owner's premises in Georgetown about 11 A. M., April 27, 1900. It ran for about two hours, covering six or eight miles. During this time it attacked fourteen persons and succeeded in biting two. It bit two horses and four dogs and attempted to bite several other animals, and was finally killed by a man whose brother it was viciously attacking. The post-mortem examination of this dog indicated rabies. Inoculated rabbits died of rabies. One of the horses which was bitten in the nose was taken to the experiment station of the Bureau of Animal Industry for safe keeping. This horse developed rabies June 4, after an incubation of 38 days. The disease was very intense, the animal violently kicking, pawing, and tearing its flesh with its teeth. It died June 5. Two sheep were inoculated with an emulsion of the medulla of this horse. With one the virus was injected at the base of the ear, with the other it was injected into the connective tissue behind the right shoulder. The former sheep remained well; the latter showed symptoms of rabies July 1, after an incubation of 26 days. The first day of its illness this sheep was very vicious, attacking everything that came into its stall; if sticks were held towards it, it would strike them with its head so violently as to knock them from the hands of a strong man; it also snapped and bit at sticks very much as would a vicious dog. The second day it was down on its side, paralyzed and unable to get up. It died July 2.

If this disease, which developed in a dog, which was communicated by biting to a horse and which was inoculated by virus taken from the medulla upon rabbits and a sheep, was not rabies, what was it? Will those who express doubts as to the

existence of rabies kindly inform us where in the veterinary literature of the world a disease other than rabies has been described which includes the features shown by these animals; a disease starting with the dog, communicable by biting, and by inoculation with the fresh medulla, having 26 to 38 days incubation, characterized by excitability, viciousness and paralysis, and ending in death in the course of one or two days? The speaker can only refer these characters to one disease, and that disease is rabies. The nature of the disease was clearly indicated by the post-mortem examination of the dog and by the inoculation of rabbits. It was unquestionably the same disease as affected the other dogs tested in the laboratory and to which reference has already been made.

The assertion made by a few individuals that an identical disease may be produced in experimental animals by inoculating subdurally with brain substance from healthy animals or even with inert substances is not supported by the facts. That paralysis and death may be caused by simple injuries to the brain is evident; but the animals so injured do not show the long period of incubation of rabies; they do not present the symptoms of nervousness, restlessness, irritability, viciousness, fury and paralysis, in succession and leading to death in a few days after the appearance of the first symptoms; they do not develop virulent saliva by which the disease may be communicated from animal to animal by means of subcutaneous or intramuscular inoculations. That is, rabies is a contagious disease, the most prominent characteristic of which is the virulence of the saliva; and paralysis produced by mechanical injuries to the brain can no more be accepted by pathologists as rabies, than can ulcers in the nose produced by caustics be accepted as glanders, or than inflammation of the lungs produced by the injection of oil of turpentine can be accepted as contagious pleuro-pneumonia.

RABIES IN MAN.

Admitting the existence of rabies in dogs and other animals, is the disease communicable to man? Are we to accept

the statement so frequently made that all of the alleged cases of rabies in man are nothing more than a mere nervous affection developed as the result of worry and fear—the so-called lyssophobia? The men who make such a statement must either be very ignorant of comparative pathology or they must be very reckless in their assertions. Let some person who holds these views tell us of a single disease which is communicable between so many species and such unrelated animals as the horse, the ox, the sheep, the pig, the dog, the rabbit, and the guinea pig, and which is not at the same time communicable to man. One of the commonest diseases affecting unrelated species of animals is tuberculosis. It is also the commonest disease of man. Another disease affecting all warm-blooded animals is anthrax. It is easily communicable to man. Glanders, a disease of the equine genus, may be communicated to dogs, cats and other carnivora, and to guinea pigs, and with difficulty to sheep, goats and pigs; it is not communicable to cattle, yet it readily affects man. Actinomycosis affects cattle, swine, horses and some other animals, and to this disease mankind is also susceptible. Cow-pox affects horses and cattle and is easily transmitted to man. Aphthous fever, though more particularly a disease of ruminants, affects also horses, dogs, cats, pigs and poultry; it is frequently communicated to man. Tetanus affects widely separated kinds of animals and attacks mankind. Malignant œdema is a disease of various species of animals and also of man. This covers the communicable diseases other than hydrophobia which affect widely separated species of animals. The rule in comparative pathology, therefore, is that a disease which may be communicated to unrelated species of animals may also be communicated to mankind.

It is easily shown by inoculation experiments, which may be repeated at any time, that rabies affects as wide a range of subjects in the animal kingdom as do any of these diseases; it is not confined to domesticated creatures, but develops in wild animals, birds and monkeys. All analogy, therefore, would lead us to conclude that mankind should be susceptible to it. Add

to this analogy the observation of thousands of instances of supposed transmission covering a period of more than two thousand years, and the case becomes so strong that it requires much more than a mere assertion to disprove it.

We have, however, more evidence than this to prove that hydrophobia in man is not a mere mimetic disease. In the great debate on the subject of rabies which took place in the Paris Academy of Medicine in 1863, M. Tardieu, referring to the official statistics of France, said: "We owe to them the ruin of a serious prejudice perpetuated by the obstinacy with which certain physicians have held to the non-existence of the rabies virus, offering themselves with a courage worthy of a better employment for an experiment in which they would be the first victims. Rabies, which for them is but a convulsive nervous affection originating most often from fear, the statistics show us developing at an age when the moral emotions are not yet born, when the imagination does not remain stricken with chimerical terrors—in early infancy. More than thirty cases of rabies have been noted with children under five years, some of them of two and three years."* Since that time the communication of the disease to young children, some of them less than one year old, has frequently been recorded, but no one has explained how this could have occurred if the disease was simply due to the imagination.

The proof of rabies in mankind which appeals most strongly to the scientific man of to-day is the experimental demonstration. The comparative pathologist has always accepted such a demonstration as incontestable with other diseases; is there any reason why it should not be equally convincing with rabies? When we have questioned the diagnosis of glanders, we have inoculated a well horse from the suspected one, and if glanders developed in the inoculated animal we have concluded that the horse from which the inoculation was made must have had glanders. A disease cannot be communicated by inoculation if the individual from which the inoculation is made does not

* Tardieu. "Discussion sur la rage." Bul. de l'Acad. de Med., 1863, p. 1152.

have it. Inoculation has, consequently, become the supreme test of anthrax, pleuro-pneumonia, foot-and-mouth disease, tuberculosis, Texas fever, and other contagious diseases. Now, what does the experimental method show about rabies in man?

Magendie says: "We have (M. Dupuytren and I) injected in the radial vein of a young man affected with rabies about eight grains of gummy extract of opium, without any apparent result. I inoculated, with my *confrère* Breschet, the saliva of this patient upon a dog, placing it under the skin of the head (*sous la peau du front*), and the animal became rabid at the end of about a month. Two dogs which were bitten by this one also became rabid after forty days. These last bit several other dogs, but without any bad result. In this series of experiments rabies was arrested, then, of itself at the third generation." *

Earle, Hertwig and Renault made similar inoculations from affected persons to rabbits, and obtained identical results. In recent years, since the subdural inoculation of rabbits has been a recognized method of diagnosis, there have been many inoculations of these animals with virus from the human subject which have caused the disease. There have been two cases in Washington in which the diagnosis of rabies was confirmed in this manner; and Dr. Law, as reported elsewhere, has inoculated both dogs and rabbits with human virus and produced the disease.

How can this evidence be set aside? How can such arguments be answered? They are not answered except by blatant assertions unsupported by facts. When the saliva of a man produces rabies in the dog upon which it is inoculated, it is certain that the man had rabies. There is no other conclusion admissible. The virus of a contagious disease cannot be originated *de novo* as the result of anxiety and fear.

We must conclude, therefore, that rabies is communicable to man, and that the evidence of this is overwhelming and unimpeachable.

* F. Magendie. *Journal de Physiologie Experimentale*, 1821, Vol. 1, p. 42.

THE PREVENTION OF RABIES.

Admitting that there is such a disease as rabies, admitting its frequency, admitting that it is communicable to man, what measures are indicated for its repression and eradication? The measures generally adopted have for their object the reduction of the canine population rather than any direct influence for the destruction of the virus or the prevention of contagion. Such measures consist in the levying of a tax upon dogs, with a requirement that the dogs wear a numbered tag to show that the tax has been paid. To prevent violations of this regulation, it is usual to have a dog-catching force whose duty it is to seize all dogs found in public places without tags, and if these are not redeemed within a specified time, to destroy them.

The effect of such a regulation depends very much upon the amount of the tax and the energy and thoroughness with which the measure is enforced. Usually the requirements of this law or ordinance are evaded by a large number of dog owners, and it is common to see on the streets dogs without tags. There is seldom an adequate force of dog catchers, and the sympathies of many communities appear to be with those who violate the law rather than with those who endeavor to enforce it.

When there is an unusual prevalence of rabies among dogs, or when unfortunately some person contracts the disease, particularly if that person happens to be well known or prominent in the community, there may be a temporary exhibition of strict and energetic enforcement of the regulations. But as soon as the public alarm subsides, the efforts are relaxed, the dog-catcher disappears, the dogs are seen upon the streets with or without tags, and all things go on as before the panic occurred. While the number of dogs is thus periodically reduced somewhat, it is seldom that this reduction is sufficient to have much effect upon the propagation of the disease. It is probable that the tendency at such times to keep dogs confined in order to prevent them from being seized, has much more influence in arresting the propagation of rabies than has the mere reduction in numbers.

In nearly all cases these indirect measures have been proven insufficient and unsatisfactory. What other disease would we attempt to stamp out by simply killing off one-fourth or one-third of the animals of the species affected? And if this measure is not efficient with other contagious diseases, why should we expect it to be with rabies? It appears self-evident from a sanitary point of view that there should be some direct measures instituted to prevent the propagation of the contagion. Such a measure would be the quarantine and confinement of all dogs for a sufficient time to cover the ordinary incubation period of rabies. As the enforced and continuous confinement of dogs without open air exercise for a prolonged period is detrimental to the animals, they may be allowed in public places under such conditions as will absolutely prevent them from biting. That is, the animals should wear an efficient muzzle, or they should be muzzled and led in leash. As rabies is only propagated in nature by biting, such a regulation, if thoroughly enforced, would at once stop the transmission of the disease, and soon lead to its disappearance.

When this measure is inaugurated, however, it is at once opposed by a large class of citizens who hold it to be cruel and unnecessary. Some muzzles are unquestionably cruel, but a properly made muzzle is not cruel, nor does it greatly inconvenience the dog after he becomes accustomed to it. The authorities should, therefore, prescribe the kind of muzzle to be used, and should select one which covers the mouth with a wire cage, so as to prevent biting, but without interfering with the movements of the mouth and the ingestion of liquids.

There have been many who have denied the utility of the muzzle, the strongest argument being that dogs do not wear the muzzle at home, and when they develop rabies and escape, it is always when they are unmuzzled. Admitting the force of this argument, it is, nevertheless, a fact, that if all dogs were required to be muzzled when in public places, the appearance of a dog without a muzzle would at once attract attention, leading persons to avoid it, and causing its early seizure by the au-

thorities. Children might be instructed that an unmuzzled dog was dangerous, and that they should keep at a distance from it, and especially that they should never touch or fondle such an animal.

The results which have been obtained by muzzling, justify its enforcement wherever there is an outbreak of rabies. Most of us have heard of the experience of Berlin with this measure about the middle of the century. From 1845 to 1853, 278 rabid animals were received at the Berlin Veterinary School. This is an average of 35 a year. From March, 1852, to the same month in 1853, the number was 82, and from March, 1853, to the end of July, there were 37 more. On July 20, it was ordered that the use of the muzzle should become general. From July to the close of the year but six cases were admitted. Only four cases were observed in the whole city during 1854, and but a single case in 1855. For the seven years following there was not a single case recorded.*

While some have attributed the disappearance of rabies from Berlin at the time mentioned to other causes, muzzling has been adopted in Germany as the principal reliance in repressing this disease. Consul-General Mason reports from Berlin to the State Department that "in Berlin, Frankfort, and, so far as I know or can ascertain, in all cities and large towns in Germany, dogs are required to be muzzled whenever they are on the street or public place, and this regulation is enforced in cities even when the dog is led or held in leash by the owner, or is harnessed for working purposes to a cart or other vehicle." †

In Great Britain the results from enforcing the muzzling order have been phenomenal both in the opposition encountered by the authorities and in the successful eradication of the disease. The number of rabid dogs officially reported was, in 1887, 217; 1888, 160; 1889, 312. In the last mentioned year

* Renault, cited by Bouley in "Rapport sur la rage." Bul. de l'Acad. de Med. Paris, 1863, p. 725.

Fleming, "Rabies and Hydrophobia," p. 365.

† Consular Reports, June 19, 1900.

muzzling was adopted, and the number of cases fell to 129 in 1890, 79 in 1891, and 38 in 1892. Then, owing to persistent opposition, muzzling was stopped, and the effect of withdrawing this measure was at once seen in the increase of rabies. In 1893 there were 93 cases, in 1894, 248, and in 1895, 672. At this point, owing to public alarm, muzzling was again enforced, reducing the number of cases in 1896 to 438, in 1897 to 151, in 1898 to 17, in 1899 to 9. As no case was discovered from Nov., 1899, to March, 1900, it was believed by the veterinary officer that the disease had been extinguished in Great Britain.

No stronger evidence in favor of muzzling could be asked for or desired than this complete success in an extensive and thickly populated country like Great Britain.

A BACILLUS FROM AN INFECTIOUS VULVAR DISEASE OF CATTLE.

By Joseph W. Parker, D.V.S., St. Joseph, Mo.

Read before the Missouri Veterinary Medical Association, at St. Louis, Oct. 3, 1900.

Under the title "A Cattle Disease in Marshall County, Kansas" (see Fifteenth Annual Report of the Bureau of Animal Industry, U. S. Department of Agriculture), an apparently contagious pustular disease, with localization chiefly on the vulvæ of cows and heifers, is described (February, 1898) by Dr. Rice P. Steddom, an Inspector in the Bureau. In this outbreak only females were affected, and the disease certainly was not communicated by copulation. Usually after the bursting of the pustules the resulting ulcer had a tendency to slough extensively, discharging a sanious fluid. The contagious element and the mode of communication were not determined.

In the fall of 1899 an outbreak of a disease similar in character occurred near Westmoreland, Kansas. Both cows and steers were affected, on the latter the ulcers being located above the ischial tuberosities, being similar to the ulcerations on the females. In both outbreaks the disease yielded readily to treatment (silver nitrate, antiseptics).

On December 14, 1899, Dr. Steddom, who also made investigation of the latter outbreak, furnished me specimens of diseased tissue taken from the margins of the ulcers. The specimens had been taken from the living animals the preceding day and were in good condition, having been kept at a low temperature. On the evening of December 14th I made two stab cultures on agar agar, from internal portions of the two larger pieces of tissue (about $3\times2\times1.5$ inches), from different animals, obtaining pure cultures from each.

The organism isolated is a bacillus resembling, but somewhat smaller than, *Bacillus typhosus*. It develops readily at room temperature or at 90° F., on agar agar, bouillon, blood serum, also on gelatine.

On agar agar it develops a white film which spreads rapidly and uniformly over the surface; a slight growth develops slowly along the line of puncture. The surface growth is moist, the agar agar apparently slightly liquefied, as indicated by the touch of the platinum wire. The bacilli usually lie singly, though sometimes forming chains of five or six. Sporulation is suspected, but not demonstrated.

On bouillon it forms a characteristic white film on the surface, clouding the medium within forty-eight hours. Examined in hanging drop, the bacillus is seen to be actively motile. The length varies from slightly ovoid to twice the width of the bacillus.

On blood serum a white growth forms which penetrates more deeply than on agar agar, and liquefies the medium slowly.

On nutrient gelatine a cup-shaped depression was formed, but if liquefaction occurred vaporization immediately followed, for no liquid was visible in the culture tube.

The organism stains with a watery solution of methylene blue or fuchsin, but best results were obtained by use of Ziehl's solution, staining one minute. In some of the specimens stained, the bacilli showed unstained areas, probably indicating spore formation.

On December 29, 1899, a rabbit was inoculated subcutane-

ously (behind left shoulder) from first culture on agar agar. Sixty hours afterward the rabbit was found dead. Post-mortem showed inflammation and gelatinous infiltration (no pus formation) about two inches in diameter, surrounding the point of inoculation and extending throughout the thickness of the costal wall; visceral organs and blood were normal. Two agar agar cultures were made from different points in the inflamed sub-cutaneous tissue, as far as practicable from the point of inoculation. Both tubes developed pure cultures of the organism first isolated.

This study, while incomplete in itself, may be of help to some one else in determining the cause and nature of the disease. I am indebted to Dr. I. J. Wolf, of the Kansas City Veterinary College, Kansas City, Mo., for valuable assistance in the laboratory work.

ACUTE BOWEL TROUBLE.

By Dr. Horace Bradley, Windsor, Mo.

Read before the Missouri Veterinary Medical Association, Oct. 3, 1900.

The veterinarian's reputation depends largely upon his success in treating what his client terms colic.

Statistics indicate that about 15 per cent. of horses suffering from colic die, and about 40 per cent. of the death rate is from this affection. With this knowledge and the fact that a dangerous condition exists, is more apparent to the owners in these affections than to others.

We are not astonished that one who is able to properly diagnose and successfully treat these cases receives praise. The term colic has been applied to a variety of acute bowel troubles, due to widely dissimilar causes, and possessing but one common character, that of abdominal pain, having its origin in some portion of the digestive apparatus. This grouping of several diseases under one term has been made necessary because of our inability to always differentiate them during life. While each has characters and special symptoms in a measure peculiar to itself,

which may lead to a probable or even a positive diagnosis, our negligence in not making continual research for these diagnostic symptoms and our failure to take advantage of opportunities of autopsies has resulted in our continual use of the empirical term colic, and has also led to a continual empirical treatment of the entire group by a common formula regardless of specific indications offered by each individual case. Under these conditions we find the treatment of acute bowel troubles unsatisfactory, and apparently a greater per cent. of cases recover without than with medication. The confusion in the treatment of this group of diseases is shown by the endless number of remedial agents used without any order. One will have the patient lie, another will have it stand, another walk, another trot or run, and some use external means of relief, as rubbing and applications of linaments, etc. Some rely on anodynes, some on sedatives, some on astringents, carminatives, stimulants, and more upon laxatives and purgatives and even drastics, and I must say some combine several or many or them in inextricable confusion or give together two diametrically opposite drugs in such proportions as to partly or wholly counteract each other. We have permitted empiricism to displace rational medicine to an unjustifiable degree. Since the importance of a more thorough knowledge along this line is of paramount interest to our reputations, let us hereafter reach out for a more classical diagnosis and treatment of these bowel troubles.

DEPARTMENT OF SURGERY.

By L. A. and E. Merillat,
of the McKillip Veterinary College, Chicago, Ill.

Cæsarian Section (*Concluded*).

Obstetrical cases that require Cæsarian section often present indications for additional interference, such as the removal of the uterus (hysterectomy); removal of the Fallopian tubes and ovaries (*salpingo-oöphorectomy*), or ovarectomy. The indication for this additional surgical interference depends upon the con-

ditions revealed when the operation (Cæsarian) is performed. When the uterus or its appendages are injured or diseased, they should be removed. The removal of the uterus as a sequel of Cæsarian section was first done in human surgery in 1876 by Porro, and since has been known as Porro's operation. The operation may be described as Cæsarian section with the removal of the uterus at the cervix, along with all its appendages.

Parietal Incision is the same as in Cæsarian section, except that it should be made a little longer and nearer to the median line, especially when the whole uterus is brought out of the abdominal cavity before incising it. The advantages of this method are, that it avoids the danger of uterine fluids escaping into the peritoneal cavity; this alone is very advantageous when the fœtus is dead and the uterus filled with putrid fluids; by this method of handling the uterus, it makes it easier to arrest hæmorrhage; but this method, however, has not met the approval of all surgeons; it has been greatly modified, and in most instances is incised and emptied before removing it.

Incision Into the Uterus may be made in most any direction; if the uterus is to be amputated it can be incised longitudinally, transversely, or both, as the case may require. The site of the incision should be selected, limited and directed by the location of blood vessels; the incision made as rapidly as possible, either with a pair of scissors or by tearing; but before doing this tampons or sponges must be placed around the uterus in such a manner that they will prevent the fluids entering the cavity. When the uterus is incised, the surgeon should remove the fœtus and give it to some attendant and then direct his atten-

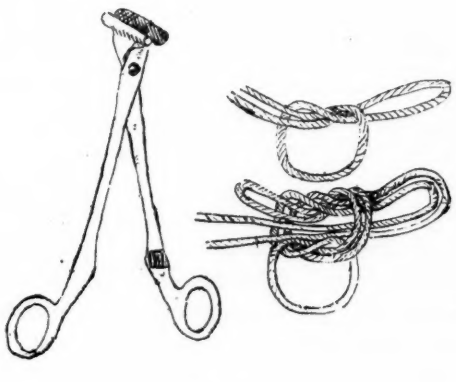


FIG. 31.

tion to the completion of the operation. By removing the fœtus from the uterus, it is more easily handled than when excised without doing so.

Placenta.—The placenta may be removed from the uterus before excising it, but in most cases it is not necessary. The only reason why it should be removed is that it reduces the size of the uterus and makes it easier to handle; while, on the other hand, it is a loss of time and increases the danger of hæmorrhage, and for this reason it is generally considered more practical to leave it intact and remove it with the uterus.

Hæmorrhage may be controlled by the application of a T-shaped forceps (Fig. 31–a) to the edge of the wound, which will quickly arrest it; by applying a temporary ligature around the cervix that can be easily removed (Fig. 31-b); or by inserting the hand into the abdominal cavity and compressing the cervix.

The Removal of the Uterus.—The operation is more simple in quadrupeds than in bipeds; the uterus is not so muscular and the pedicle does not require so much attention as is given to it in human surgery.

The uterine and ovarian arteries are carefully and substantially ligated, and the uterus amputated as near to the os uteri as possible. The mucous membrance of the pedicle or stump should be curetted, and a tampon placed into it, so that it can be removed from the vagina; the anterior part of it must be carefully trimmed and the lumen closed by a catgut suture; and, when all hæmorrhage is arrested and the edges of the wound rendered aseptic, the peritoneum should be sutured over the anterior part of it. The abdominal cavity must be thoroughly irrigated and closed, as in Cæsarian section.

After-treatment.—Pain must be relieved by hypodermic injections of morphia; the bladder must be emptied at regular intervals; the tampons must be changed every day; the external parts must be kept clean; occasional vaginal douches must be given; and a rise of temperature should be promptly met by ascertaining the cause, and the use of antiseptics. Peritonitis is the most dreaded sequel, and when known to exist should be treated with cold packs, turpentine, enemata and saline aperients. Rectal nutrient and stimulating enemata are necessary to maintain and strengthen the depleted system.

OVARECTOMY OF THE SOW.—The operation, though comparatively simple, requires a certain amount of practice to give to an operator an envious degree of dexterity. Many of the

common spayers have acquired the precision and dexterity required to make a favorable impression upon their clients, and get favorable results from the operation, while the veterinarian with his knowledge of its surgical anatomy and the technique of the operation without the required practice is generally a bungler. Every young veterinary surgeon should familiarize himself with the operation and acquire some degree of proficiency in performing it; besides he should acquaint himself with its effects, the sequelæ of the operation, and be able to clearly demonstrate its indications and contra-indications. He should carefully study its physiological effect; the proper age of the sow and the most favorable season for the operation, together with all the conditions that follow the operation that are profitable and advantageous.

Sows of most any age bear the operation without a very marked depression, when they are properly prepared for the ordeal and the operation is well executed. Young sows between the ages of four and eight weeks, however, withstand it best. Sows should not be spayed during œstrum. Multipara endure the operation best about six weeks after parturition.

Preparatory Treatment.—Sows to be operated upon should not be fed during the last twenty-four hours previous to the operation, and should be kept in a pen or enclosure; this pen or enclosure should be clean, well bedded with clean straw or shavings. Even though aseptic measures cannot be carried out to the letter without great inconvenience, a degree of cleanliness will add to the comfort of the operator and his assistants. Just before the operation the sows should be driven out of the pen and given gentle exercise, which will induce them to defecate and micturate. During this time the pen or enclosure should be cleaned and rebedded; and sows returned to the pen.

Operation.—The method of restraint is a very important factor in spaying, and most every practical spayer has a method of his own, which is practically the same as all others with but a slight deviation to suit some particular step in the operation which he has adopted. Large sows should be caught and a rope looped around its upper jaw (Fig. 32), which when drawn will cause her to draw back, and while doing so can easily be thrown upon her right side; when cast some convenient method of securing must be improvised; if the animal is very strong a piece of timber or a ladder placed across its neck, with the weight of an attendant upon it, will in most cases answer the purpose. Smaller animals are best secured as follows: The

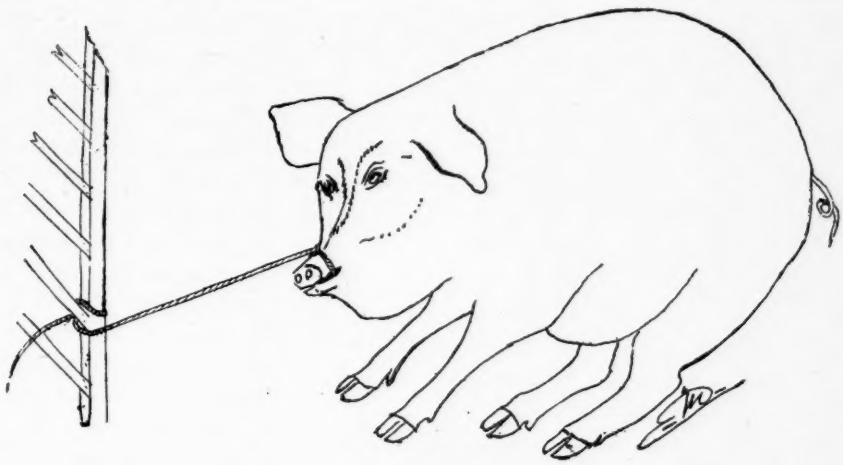
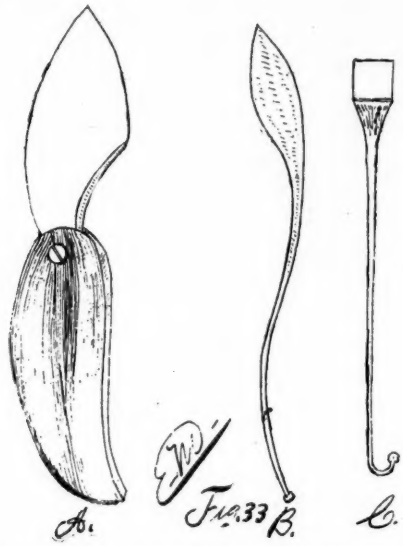


FIG. 32.

PRACTICAL METHOD OF SECURING A HOG.

operator should be seated upon a low stool and have the pig laid upon the right side with its posterior extremity to his left, and its back toward him; he then places his left foot upon its neck and his left under the right flank of the pig; and his assistant should draw the hind legs backward, which brings the back of the animal against his left leg and stretches the abdominal wall.

Technique of the Operation.—The first step to be taken in the operation is to shave the hair (bristle—this can be done with the spaying knife, Fig. 33–A); and next, wash the field where the incision is to be made with an antiseptic solution, following by making an incision in line with the fibres of the oblique muscles, near the external angle of the ilium and as deep as the peritoneum. Another method of opening the abdomen is to incise the skin and pierce the muscles and peritoneum with the forefinger of the right hand. This is a method adopted by many successful operators, and to facilitate the procedure, a small superficial incision is made into the muscular coat, and the forefinger of the right hand forced through it and the peritoneum with a short, forcible, rotatory motion; the opening is then enlarged by inserting the forefinger of the left hand and tearing the muscular coat and peritoneum, making the internal opening larger than the external one. The next step is to locate the ovaries and bring them out through the opening made in the abdominal wall; this is done by inserting the right forefinger into the abdominal cavity, following the



A, knife used for spaying sows; B and C, instruments for Chinese method of spaying sows.

wall, keeping the finger against the abdominal wall and the intestine against the back of the finger and extending it to the vertebræ near the opening of the pelvic cavity, and at the same time explore for the horn of the uterus, which in young animals is about the size of a "goose quill" and appears more indurated to the touch than the intestine. The horn when located is caught by flexing the finger and pushing its tip against the wall; when thus secured it can be brought to the external surface and held with the fingers of the left hand; the assistant then relaxes the hind legs and the right hand brings up the horn while the left takes it up until the ovary appears at the external surface, where the horn and ovary is held with the right hand, while the left forefinger brings out the right horn and ovary. In young sows the ovaries are cut off at the bifurcation, but in older ones the ovaries should be taken off by torsion, first one, then the other. The hind legs are relaxed; the viscera returned, and the wound sutured by applying two or three stitches. Small pigs are brought to their feet by the right leg, but larger ones should be brought to their feet by flexing them under the body and raising the posterior extremity. They should be placed in a clean pen or enclosure and fed lightly for two or three days. The stitches should be left in until they drop out of their own accord.

Special care must be taken to prevent undesirable sequelæ

which may result from negligence or improper execution of some of the important steps which may appear unimportant during the operation ; such oversight, negligence or indifference is often the cause of slow recoveries ; the following mentioned in order of their importance should receive special attention :

(*a*) Pockets or sinuses in the edges of the surgical wound.

(*b*) Adhesions of the viscera to the abdominal walls in the *region* of the cicatrix.

(*c*) Hæmorrhage.

(*d*) Peritonitis.

(*a*) *Pockets or Sinuses.*—These are formed by separating the layers of the muscular coat from one another, or the muscular coat from the peritoneum or skin, by piercing the wall with the finger, which may tear the connective tissue that separates these structures from one another. To eradicate these sinuses the peritoneum and the muscular coat are torn beyond the extremities made in the skin. The lateral sides of the wound must be examined and all the sinuses and pockets destroyed ; unless these are properly treated before the wound is closed fistulæ are likely to follow.

(*b*) *Adhesions of Viscera.*—When any part of the viscera is sutured or enclosed in the wound by the stitches, it will unite with the wall at the cicatrix ; this condition may not prove serious, but nevertheless will impair the health of the animal and reduce its value. Upon post-mortem of spayed sows it is not uncommon to find a dilatation of the intestine anterior to this adhesion. Animals thus affected are generally not as thrifty as the remainder of the herd, but present no symptoms of disease. The horns of the uterus may also adhere to the wall at the cicatrix. The union of this viscus is not so serious as the one previously mentioned ; but in some instances the intestine passes over the horn and forms a loop which may become strangulated; however, this is not a common condition, but one found occasionally in abattoirs ; whether or not this change in the relation of the viscera ever proves serious, we are unable to tell.

(*c*) *Hæmorrhage.*—In young animals this is not an important factor, and demands but little attention ; if it is more convenient to cut the ovaries than to remove them by torsion, the operator need not hesitate to do so for fear of hæmorrhage ; but in old or pregnant sows, however, there is more danger of hæmorrhage than in the young ones, and it is necessary to take all precautions to prevent it. The ovaries in such cases must never be excised with a sharp instrument without placing a

ligature around the ovarian ligament and arteries; the hæmorrhage following such a procedure is generally fatal. The proper way to remove them is by torsion, which invariably prevents hæmorrhage.

(*d*) *Peritonitis.*—This is not a very common sequel; but does occasionally follow gross neglect of cleanliness, such as the introduction of dirt into the cavity through the abdominal incision during the operation. Septic peritonitis may result from secondary abscesses which occasionally occur along the course of fistulæ located between the muscular coat and the peritoneum, and "break open" into the peritoneal cavity—the direction of least resistance—emptying their contents into the cavity. These fistulæ usually originate in sinuses or pockets in the lips of the surgical wound which were not properly treated before suturing the wound. Peritonitis seldom follows the operation except from these two accidents.

Complications.—The complications that may interfere with the operation or make the location of the ovaries difficult can be considered in the following order:

(*a*) Protrusion of intestine.
(*b*) Distended bladder.
(*c*) Rupture of the bladder.

(*a*) *Protrusion of the Intestine* usually occurs during the withdrawal of the horns and ovaries from the cavity; and in such cases the operation should be suspended until they are returned into the abdomen. This is sometimes a difficult task, especially when the intestine is tympanitic. As soon as they are returned the operation should be continued. In case of tympanites or when the intestine is filled with aliment, the location of the ovaries is made difficult by being crowded from their normal position, and for this reason it is absolutely necessary that sows that are to be spayed should not be fed during the last twenty-four hours prior to the operation.

(*b*) *Distended Bladder.*—A distended bladder crowds the intestine through the incision; changes the relation of the uterus and its horns and ovaries; and, like tympanites and loaded intestine, makes the location of the structure almost impossible, and even when found it may be a difficult task to draw them out of the cavity. When the bladder is distended it is necessary to empty it before proceeding any farther with the operation; this can be done by placing the hand upon the region of the bladder and applying gentle pressure.

(*c*) *Rupture of the Bladder.*—The bladder when distended

may be punctured with the finger in piercing the muscular coat and peritoneum, which if it is empty is impossible. The accident, however, is generally considered unavoidable on the part of the operator, but with the proper precautions a great percentage of such accidents can be avoided. The sows to be spayed must be given a little exercise just before the operation, which will induce omichesis; besides should the operator notice that it is distended he should empty it by applying pressure to it with the hand before piercing the abdominal wall, but this condition is seldom noticed before the abdomen is opened, and in opening it is when the bladder is generally ruptured.

Two Methods of Performing Ovarectomy in the Sow. Translated from Möller's "General Surgery," by J. W. Schumacher.

The ovaries of the pig being fastened to the long intestinal horns of the uterus makes it possible (1) to reach both ovaries from one flank, and (2) to introduce a probe into the uterus, which enables the operator to draw the ovaries to an opening in the linea alba.

According to this, two operations are in use; one through the flank and another through the linea alba.

The first operation is executed in the following manner: the pig is placed on its right side in front of the operator, who is seated on a low chair; an assistant holds the hind legs in extension, while the operator holds the animal to the ground with his right foot. The hair is shaved from the field of the operation; an incision is made 3 to 4 cm. anterior to the point of the hip, in the direction of the external oblique muscle, that is, in a line from the backbone to the kneefold. The incision is made large enough to admit the right forefinger to pierce the muscles and peritoneum. This must be done quickly, vertically to the wall; and during an inspiration, or while the pig is squealing, in order to prevent the loosening of the peritoneum from the wall. The finger so introduced into the cavity searches for the left ovary, which is located between the lateral angle of the ilium and the median line of the sacrum. The ovary is about the size of a bean and hard to the touch. The pig will usually squeal when the ovary and uterus are touched, and this is an important feature in directing the finger.

The left ovary is brought outside of the wound and held with the right hand, while the forefinger of the left hand gradually brings the horn through the wound into the right hand,

and as soon as the bifurcation of the uterus is reached, the right horn is brought out of the cavity in the same manner. Both ovaries are then cut, pinched off with the finger-nails. In young sows the whole uterus can be taken off without damage; but in older ones only the ovaries should be removed, and the body of the uterus should not be drawn out of the cavity. The horns of the uterus should be returned into the cavity; the wound stitched; the animal turned into a clean cool stall; and they should receive nothing but clean water for the next twelve hours, followed by easily digested food. Light exercise may be given after the first day.

CHINESE METHOD.—The operation through the linea alba is not performed so often and is not so difficult for an inexperienced operator as the one just described.

The pig is suspended by the hind legs, or held in a dorsal position upon a table. An S-shaped probe (Fig. 33–B) is inserted into the uterus, passing it along the superior wall of the vagina to prevent it from entering the urethra, and into the uterus through the cervix. A chisel-shaped knife (Fig. 33–C) is pressed through the abdominal wall close to the linea alba, or laterally to the last left teat. The dull hook is then introduced into the cavity and a search made for the uterus, which is easily found and brought into the wound. The first ovary is brought outside and detached; the second is treated in the same manner. The wound is stitched, and it usually heals by first intention. The complications are hæmorrhage and peritonitis. The first causes death within the first twenty-four hours; the second in from three to thirty-six days. Torsion is the best remedy for the first complication, and antiseptics for the second.

OÖPHORECTOMY (OVARIOTOMY) IN THE BITCH.

BY LEON W. YOUNG, M.D.C., PROFESSOR OF CANINE SURGERY, MCKILLIP VETERINARY COLLEGE.

The term ovariotomy in the medical vocabulary has been forced into meaning the extirpation of an ovary on account of some disease of its own structure. The word itself is a barbarous compound of Latin and Greek, meaning ovary and an incision. It occurs to me that oöphorectomy (meaning to cut out the ovary) is the proper term, and far more appropriate to the operation usually performed by our profession. In modern usage by the medical profession, the term ovariotomy is limited to the operation for the removal of an ovary greatly enlarged by some disorder. By oöphorectomy is meant the operation for the removal of diseased ovaries, or of both ovaries for the purpose of

causing menopause, while the ovaries may or may not be diseased.

The structure and function of the ovary is well known. But a slight reference to its covering may not be out of place, as it can be recognized by this. Though the investing membrane it derived from the peritoneum its structure is materially differene. First, in place of the endothelial cells of the peritoneum, we find a single layer of columnar cells. This is known as the germinal epithelium of Waldyer, and it is to this membrans that we attribute the dull grey color of the ovary.

The exact location of the ovary in the dog I have never seen described, and I know of no authority who has given an opinion as to what he regarded as the normal position. Among the bitches, wherein I have had opportunity for observation, I have never found the uterus lying symmetrically in the middle of the pelvis, but always to one or the other sides, most often on the right, and I find that the positions of the ovaries are varied directly proportional to the deviation of the uterus, in which case the left ovary is pulled upon by the uterus, and lies obliquely, the ovary on the opposite side lying with its long axis in a horizontal position. The Fallopian tubes pass over the ovaries in each case, and turning upon themselves enter on the anterior face.

In addition to this anatomical reference, it appears to me that many practitioners could spend many interesting and profitable hours in the study of canine anatomy, for with each succeeding year the dog is becoming more popular, and his place in the home, and one might almost say family, warrants a considerable expenditure on the part of his owner. His treatment naturally falls to the veterinarian, and unfortunately, he confines his efforts to the herbivora, and little thought is given the dog. The treatment and surgery of the dog is a special study, and the sooner it is recognized by the profession, the better it will be.

Causes of Death Following the Operation.—The most common causes of death, in their relative importance, are hæmorrhages, peritonitis, either septic or traumatic, shock and exhaustion. And to prevent these should be the operator's first aim. And, in addition to this it might be well to add, that success grows with each case, and by operative skill, cleanliness, and strict antiseptic precautions, the fatality has been reduced to an average less than that of any other equally severe surgical operation, which is worthy of note, when we consider the size of the wound, the importance of the involved parts, and the delicacy of the exposed structures.

I regret to feel at liberty to criticise the profession at large, but it does not seem to me that the majority of practitioners attain the success they should in this operation. Probably for lack of proper instruction in our colleges, uncleanly habits, and absolute indifference because the patient is a dog. It was with actual disgust that I witnessed the "spaying" of a bitch at the meeting of the U. S. V. M. A. at Omaha two years ago. The operation was performed on a heap of manure in the open air, with the thermometer registering about 40° F. (estimated).

I never heard or saw in print the result of this piece of barbarous butchery, and do not believe the profession can receive any betterment by permitting such outrages before a representative body.

My own practice is to adhere to every detail of antiseptic surgery, which can be followed out only in an appointed operating room.

Preparation of the Patient for the Operation.—The bitch should be in good health (unless the operation is being performed for some pathological cause), and if not, the operation should not be performed. Saline laxatives should be given for a day or two before the operation, and the diet should consist of milk, eggs, etc.

An operation of election should not be undertaken during a menstrual period. However, when the operation is to be performed to relieve some pathological condition, no attention should be paid to the factor of menstruation.

On the day previous to the operation, the dog should be bathed, and the abdomen shaved from the point of the sternum to the pelvis, and about four inches wide. The animal should not be fed on the day of the operation.

The following articles should be provided:

Two ordinary hand basins, one containing 15 gauze sponges in a 1 to 2000 sol. of hydg. chlor. at a temperature of 115° F. (to be used for sponging the wound), and the second for washing the hands of the operator. A metal cone for administering the ether, absorbent cotton, flexible collodion, ether, a four-yard rolled bandage, and an eight-string bandage (with four holes cut, one for each leg, the strings to tie over the back), and the following instruments: 12 artery forceps, 1 scalpel, one pair of scissors, one probe, three threaded needles and one wire ecraseur, all of which should be boiled for twenty minutes at some time previous to the operation.

At the operation these should be submerged in a shallow

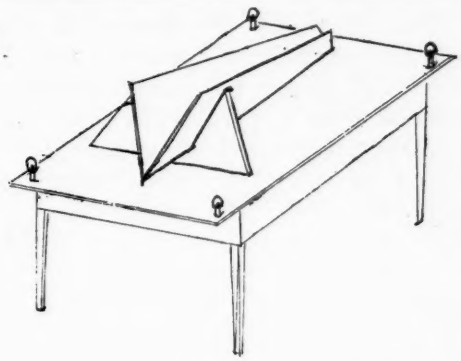


FIG. 34.
YOUNG'S CANINE OPERATING TABLE.

pan or tray containing a 5 per cent. solution of carbolic acid.

The operating room should be at a temperature not less than 75° F., and if of a dusty character should be well sprinkled with a mild solution of creoline.

FIG. 35.
YOUNG'S METHOD OF SECURING DOGS FOR ADMINISTRATION OF ANÆSTHETIC AND ABDOMINAL OPERATIONS.

When everything is ready, the animal is placed upon the table with its head toward the low end of the chute, and confined as described, and anæthetized with ether. The abdomen should be washed off with a 1 to 1000 sol. of corrosive sublimate and dried with a little ether. An incision, about three inches in length, is made with a free hand, and not by nicks, in the median line below the navel, where the blood vessels are few in number, cut through the skin and fat down to the muscles. Sponge away the blood and stop all hæmorrhage before opening the abdominal cavity, by the use of catch-forceps. Next make a small opening through the muscle, and by introducing the blunt point of your scissors, make the opening of the desired size; again stop all hæmorrhage before opening the peritoneum. To open the peritoneum, it may be picked up by two forceps and nicked, or by a delicate tenaculum. Introduce a finger into the opening and with your scissors make the opening the desired size. Other things being equal, the short incision is safer, but the opening should be large enough for easy manipulation.

We now have a full view of the parts, and it is my practice to pick up the uterus and following it to the horns, place a sponge under it. (To one who has never performed the operation, and who cannot recognize the uterus, I would suggest that a probe be introduced into the vagina, which can easily be felt, and which will immediately put you on the right track.)

Follow up the uterus in a forward and outward direction until the ovaries are found. These will be recognized by their color, as already described, and their hard set feeling also serves to identify them.

These should be removed by the wire ecraseur or torn away with the thumb nail.

If necessary the cavity should then be cleaned up, and the wound closed by sewing the muscular coat with catgut sutures (interrupted). The skin should be sewed with silk and dressed with collodion and cotton. The roller bandage is then put on and the eight string bandage adjusted over it.

The wound should be dressed once daily, and the stitches removed on about the tenth day, during which period the patient should be fed on a milk diet.

SURGICAL ITEMS.

The dreaded sequelæ of tracheotomy which has for years been a bugbear to veterinarians, have been reduced to the mini-

mum by the use of a new tracheotomy tube devised for this purpose by Dr. M. H. McKillip. The advantages of its use have been carefully observed; and besides preventing tracheal deformities, its use has verified that it is more easily applied than any other tracheotomy tube in general use. The tube is elliptical instead of circular. The transverse axis (*latus transversum*) of the lumen is 25 mm. in length, and its congugate axis, about 12 or 13 mm. The length and direction is the same as that of any ordinary curved tracheotomy tube. A tube with these dimensions can be inserted into the trachea without destroying or removing any cartiliginous tissue. The condition following tracheotomy is generally irreparable; the trachea will either collapse or dilate, which impairs the respiratory function and reduces the value and usefulness of the animal. Stenosis and collapse of the trachea are the most serious conditions following the operation, when the cartilages are incised or part of them excised. When the cartilages are incised and the tube inserted without excising part of them, the strain brought upon the lateral arcs (Fig. 36–Aa) of the cartilaginous rings caused by spreading them apart to form an aperture for the tube, encourages softening and absorption of the cartilaginous tissue forming these arcs; and as a consequence, the curvature is replaced by a straight cartilaginous wall or even a convexity (Fig. 36–B), which reduces the calibre of the trachea when the tube is removed and the cartilages are approximated. When the tube

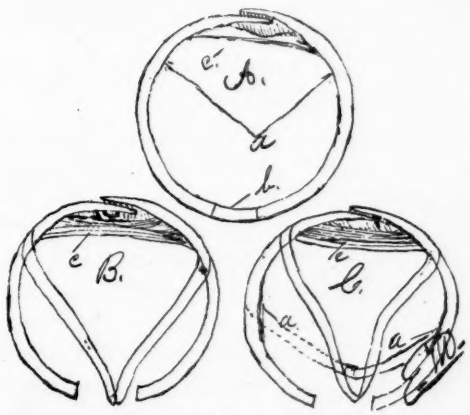


FIG. 36.

A, abnormal tracheal ring; *a*, lateral arcs; *b*, segment removed in tracheotomy; *c*, trachealis muscle. *B*, Collapse of tracheal ring; *C*, collapse of ring with convexity in lumen; *a*, collapse resulting from softening of arcs.

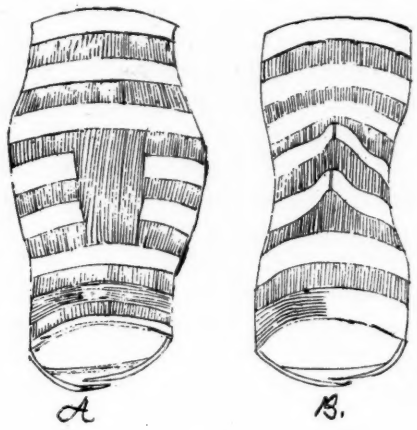


FIG. 37.
TRACHEAL DEFORMITIES, RESULTING FROM TRACHEOTOMY.

is removed the contraction of the trachealis muscle and the compression of the tissues surrounding the deformed cartilages, reduces the lumen by bringing them together, which forms a triangular opening instead of the normal circular one; this triangular opening is smaller than the lumen of the trachea, and, besides, in many instances, it is additionally reduced by a hypertrophy of the mucous membrane and submucosa. The conditions which excite stenosis (Fig. 37–B) of the trachea are caused by destroying the continuity of the rings; and, by spreading them apart, which reduces their curvature and excites an inflammation that encourages softening and absorption of the rings. Dilatation of the trachea (Fig. 37-A) is not so serious as stenosis and collapse, but is nevertheless considered a deformity. These conditions are all obviated by the use of the above mentioned tube, which is inserted between the rings instead of making an opening by destroying the continuity of the rings. The method of applying the tube is simple: the skin and subcutaneous tissue is incised longitudinally; a transverse incision is made through the connective tissue between the rings and the tube inserted into it. By this method of performing tracheotomy, the curvature of the tracheal rings is not changed; the continuity not destroyed; the rings are not deformed by softening or absorption; and, as a natural consequence, tracheal stenosis and dilatations are obviated.—(*E. M.*)

Some veterinarians are of the opinion that castration of other animals than the horse is below the standard of the veterinary profession and speak triflingly of one that castrates pigs,

etc. This opinion is absolutely wrong. The human physician does not find it below his pride to extract a tooth occasionally, because some barber or blacksmith in his town pulls teeth also; nor does he refuse his services in obstetrical cases, because some midwife could have done just as well. It is impossible to see why the castration of pigs, cattle, etc., should lower the veterinarian's standard, if the operation is performed scientifically, even if some stockman or the so-called castrators do the same operation. There is no veterinary operation which could in any way lower or damage the veterinary profession. A veterinarian must be able to do anything that can be expected of him as a veterinarian; and, it is to be hoped that the time is not far when only graduate veterinarians will be allowed to practice castration. This would not only tend to drive out of business many a quack and incompetent castrator, but would also contribute to the elevation of the profession.—(*Dr. P. Bruecher, Berlin Vet. Weekly, Translated by J. W. Schumacher.*)

The easiest method of locating the cut end of blood vessels is by blowing the blood away from them. This can be done by directing a current of air into the wound either from a pressure bottle or by the use of a common blow pipe. From an aseptic point of view the former is preferable; yet, we have never been able to attribute wound infection solely to the latter. The careful surgeon always arrests capillary hæmorrhage by irrigation, which washes away all septic products that might be directed to the wound by the current of exhaled air. Many of the arteries and arterioles cut in veterinary surgery are difficult to locate on account of the constant oozing of blood which ob scures them before they can be secured, after removing the sponge from the wound sufficiently not to obstruct the view of the operator; but, with a carefully directed current of air the blood can be cleared from the wound without obstructing the view. With a carefully and properly directed current, there will be but little splashing or splattering of blood; the blood vessels can easily be secured, and hæmorrhage arrested either by torsion or ligation.—(*E. M.*)

Nymphomania, Originating from an Abnormal Clitoris in a Cow. Reported by M. Chapelies, Veterinarian, of Houdan.—A cow, three and one-half years of age, became a nymphomaniac shortly after parturition. The owner's attention had been drawn to the enlargement of the clitoris, and the extreme sensitiveness of the animal, caused by the least touch of the vulva.

The cow had been served by a bull at least ten times without results. The clitoris was indurated, mammillated and contained three or four fibrous nodules; the mucous membrane was rosy, normal and the secretions abundant. With the aid of a pair of scissors and forceps, the clitoris was excised almost without hæmorrhage. Cicatrization was completed in a few days, and the animal became quiet. Two months later, the cow was "taken to the bull" and became pregnant.—(*Bulletin Veterinaire.*)—(*E. M.*)

A Case of Intestinal Obstruction from Neoplasia (*Reported by MM. Brisavoine and Lagneau.*) (*Recueil d'Alfort, Sept. 15, 1900*).—A young horse which had for a long time presented symptoms of digestive trouble that occurred principally after meals, was unfortunately treated with the object of maintaining and restoring the depleted system, which resulted from its ailment, by regulating the regimen (laxatives, alkalies, mucilages), and finally died. The autopsy revealed a rupture which was about 20 or 25 cm. in length, in the greater curvature of the stomach. About 40 cm. from the pylorus a tumor was found which surrounded the intestine like a muff; the diameter of the intestine was greatly reduced, and at the part involved it was almost strangulated. This condition was caused by a hyperplasia of the muscular coat. It is to this particular condition to which ought to have been attributed the cause of the trouble observed during life.—(*Translated from the Bulletin Veterinaire, Oct., 1900.*)—(*E. M.*)

Ablation of Distended Sesamoidean Sheath (*By M. Griffault, Veterinarian of 1st Hussars.*)—A mare presented a distended and partly indurated sheath on the external surface of the left anterior fetlock. Ablation was the course of treatment adopted, after the application of actual cautery; which had proven ineffective. The synovial hernia was excised as deeply as possible, under a spray of a 2-1000 sublimate solution; the skin was sutured with antiseptic silk No. 2; and, after washing the wound with salol 4 per cent., the region was dressed with iodoform gauze and absorbing cotton. At the end of nineteen days the wound was all closed but the last suture; the little wound was again disinfected, its lips brought together and a new dressing applied. In fifteen days after the application of the second dressing, cicatrization was complete. The mare was then exercised one half hour every day, which was gradually increased to one hour a day; baths and douches were given and massage applied to the parts, and after a month of this treatment no en-

largement was perceptible and the animal never lamed again.—(*Translated from Le Bulletin Veterinaire, Oct. 15.*)—(*E. M.*)

Geresa, in a recent number of *La Clinica Veterinaria* (Italy) gives the following interesting report of twelve neurectomies: 1. Two operations for lameness resulting from nail pricks: (*a*) one was still working 39 months after the operation; (*b*) the other was still working satisfactorily after 31 months. 2. Three operations for side bones; (*a*) thirty-nine months after the operation one of them was still working without lameness; (*b*) one year after the operation one of them was sold for other causes; (*c*) three months after the operation the other was still working satisfactorily. 3. Two operations for chronic laminitis: (*a*) one was sold on account of septic inflammation, about fifteen days after the operation; (*b*) the other was sent to the abattoir for the same reason, two months after the operation. 4. Two operations for navicular disease: (*a*) acute case was sold about four months later, because the hoof began to loosen; (*b*) a sub-acute case lost its hoof about a year after the operation. 5. Three operations for chronic navicular disease: (*a*) one performed uninterrupted service for fifteen months, four months service at intervals, and was sent to the abattoir; (*b*) one of them was still working twenty months after the operation; (*c*) the remaining one performed uninterrupted work for seven months and was killed.—(*Trans.—E. M.*)

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D.V.S., New York City.

CANCER OF THE RECTUM IN A HORSE [*By Prof. Olt*].—The Pathological Institute received the rectum of a five-year-old gelding, which was destroyed on account of an obstruction of the rectum caused by tumors, and found 26 cm. of the mucous membrane of the rectum covered by horned-plate epithelia. In this abnormal skin-like mucous membrane islands of normal rectal mucous membrane sharply defined were present, 15 cm. from the anus, and from which, 20 cm. anteriorly, the space contained belt-shaped nodular tumors, of a partly destroyed and ulcerated character. The rectal wall, 9 cm. thick on section, consisted of solid grayish nodules, inclosed in dense connective tissue, varying in size from a pea to a hen's egg.

The muscular coat, anteriorly to the part occupied by the new formations, was thickened to about four times the normal size, while the affected part was atrophied. The tumors proved the presence of a plate epithelial cancer. The interesting factor in this case is that instead of a cylindrical cancer, which is always the type of cancer of mucous membranes, he found the plate epithelia cancer.—(*Deutshe Thierärztl. Wochen.*)

PENETRATING ABDOMINAL WOUND WITH PROLAPSE OF THE GREAT MESENTERY AND THE SPLEEN [*By Gero*].—A five-year-old mare, which was in the ninth month of pregnancy, by accident received a perforating wound on the posterior part and the lower third of the chest, corresponding with the 6th, 7th, and 8th ribs, through which a large part of the mesentery and part of the spleen prolapsed. The mesentery was cut off right under the wound. After a careful disinfection with a 10 per cent. sublimate solution of the spleen, it was ligated with catgut in the constricted part produced by the sharp edges of the wound. The prolapsed portion was then removed and a compress bandage applied. The following day the temperature was 38.8° C., pulse 62, breathing somewhat difficult. On the fourth day the temperature was 40.6° C., pulse 88, the animal restless. After a morphine injection and the administration of digitalis these symptoms gradually subsided, and the animal completely recovered in seven weeks. Abortion in this case did not take place.—(*Veterinarius.*)

LONG INCUBATION OF RABIES [*By Kabo*].—A ten-year-old cow (of Hungarian breed) was bitten on the muzzle by a dog, which died later, showing all the characteristic symptoms of rabies. The cow did not show any symptoms whatsoever for 323 days, when marked symptoms of rabies developed and she died in six days. Rabbits were inoculated with an emulsion of the brain, and they died after eighteen days from typical rabies. —(*Veterinarius.*)

THE OPERATION ON CRYPTORCHIDS [*By Dr. Plose, Budapest*].—The author reports his experiences in regard to the operation upon cryptorchids, which were collected from numerous operations of this kind. His procedures are as follows: Two days previous to the operation 60–80 grammes of Glauber's salt is administered to the horse two or three times daily, the amount of food diminished, and twelve hours before the operation food is withheld entirely. The operation itself is performed in the side position, as in this way asepsis is much more easily secured. The field of operation is carefully cleansed and in the

prepuce a cotton tampon is introduced to prevent the prolapse of the penis during the operation, whereby infection of the inguinal region is prevented. The anterior end of the prepuce is drawn forward by an assistant. The skin and the fascia under it, in the region of the external inguinal ring, is then cut about five to eight cm. in length, after which the hand is forwarded to the abdominal cavity, through the tendinous portion of the external oblique muscle of the abdomen. The opening of the abdominal cavity is then proceeded with by the author according to the "Danish" method, which consists in the separation of the external oblique muscle, followed by the puncturing of the internal oblique by two fingers, in the direction of its fibres, about three cm. from the posterior border. In most cases it is necessary to enter the abdominal cavity with the whole hand. With the hand in the abdominal cavity the author feels for the vas deferens, which, when found, is easily followed to the testicle. The testicle is then drawn through the opening of the wound, the cord ligated, and, after the separation of the testicle, placed back in the abdominal cavity. In cases where the whole hand is introduced into the abdominal cavity the author generally packs the wound with gauze, which is held in place by suturing the skin. The gauze is removed three or four days after the operation. By packing the wound the healing of the external parts is retarded, but by this method prolapse of the abdominal organs is prevented. Out of 57 cases of cryptorchids so operated upon only 7 per cent. proved fatal, while 93 per cent. were cured.—(*Veterinarius.*)

EXPERIMENTS IN INOCULATIONS AGAINST TEXAS FEVER [*By Lignière, Alfort*].—L. proved that the infectious disease of Argentina, which is known there as "Tristeza," is a form of Texas fever, which was first described by Smith and Kilborne. The cause of this infectious disease is a hæmatozoon (*pyroplasma bigeminum*). The disease is mostly transmitted by insects; the mortality is very great, and adult animals seldom, if ever, recover; one attack gives positive immunity. Lignière published an extensive work on the etiology of this disease, the biology of the parasite, and the cases observed by him, and it is of great interest, containing numerous drawings and photographs in relation to this malady. But as this work was published before the investigations were finished, it does not contain the most important part as to whether L. succeeded before his departure from Buenos Ayres to procure an inoculation which would immunize the cattle against "Tristeza." The

experiments of L. proved, that the inoculated animals withstood, without any bad effects, the inoculation of a dose of virulent blood, which was taken from animals which suffered from a severe attack of this disease, most of which died from the disease. These experiments are of great importance, as it is the first time that it has been found possible to inoculate against a disease caused by a hæmatozoon. The experiments will be repeated during the following months in Alfort, and the Société Centrale de Medecin Veterinaire, appointed a commission, consisting of Messrs. Moussu, Mollereau, Nocard and Railliet, to report the results of the investigations. We are indeed especially anxious to hear these reports, as the disease is claimed to be the same as Texas fever, the dreadful malady which annually causes an immense financial loss in the United States. At the same time, the Bureau of Animal Industry, to which all the credit is to be given for these investigations as to the etiology of Texas fever, is now at work experimenting, to obtain an immunizing serum, and it should not at all surprise us to hear in the near future of their success in this direction.

CONTRIBUTION TO THE STUDY OF THE INTERNAL SECRETION OF THE TESTICLE [*By Pruneau*].—P. distinguishes in the testicle a secretion which is emptied to the outside, the semen, and one which is reabsorbed, having on the system a certain function. To study the influence of the internal secretion on the system, P. performed different experiments on rabbits, guinea pigs and dogs, in which (a) the vas deferens was cut out, ligated or severed, (b) the animals castrated, (c) control animals of the same race not operated upon. The animals which were treated in this manner were carefully observed, their daily increase in weight, the secretion of urine, with the other excrements, also the general metabolism, and found the following: (1) The testicles and the production of the semen is not influenced in any way by the ligation of the vas deferens. In dogs when ardent the testicle became enormously swollen, which, in the lapse of a few days, regained their normal size. On the prostrate no atrophy could be noticed. (2) In cases where the vas deferens was cut through a slight decrease of the urine excreted was noticed. (3) In old guinea pigs a marked atrophy of the vesiculæ seminalis was observed, in cases where the vas deferens was severed. (4) The daily amount of the excreted urea, and also the whole amount of nitrogen, is decreased after this operation. Therefore the metabolism is somewhat slower. (5) In young animals following this operation,

an increase in the amount of blood was noticed, while in old ones a slight decrease. (6) An increase in the weight of the bony skeleton was noticed in all cases after the operation. (7) The operated animals were all stronger and livelier than the control animals. In cases where two male animals, one of which had the vas deferens ligated, were put in a cage with a female, the animal operated upon always copulated, driving the one not operated upon from the field.

ENGLISH REVIEW.

TOXICOLOGICAL EFFECTS OF IZAL ON THE DOG AND CAT [*By F. Hobday*].—Izal is a disinfectant and parasiticide which has gradually worked its way into veterinary and medical practice, and, although it is claimed as absolutely non-poisonous and non-irritant, Prof. F. Hobday records experiments in dogs and cats which have proved it to possess different properties, the use of the drug having proved fatal in two cases. From his experiments the Professor says: "I am convinced izal is poisonous to dogs and cats if used injudiciously. Its action is irritant and narcotic and its use in these animals, especially when applied to a large area of the skin, must be attended with discretion, as in some animals which seem to be well out of danger paralysis and death ultimately ensued.—(*Journ. of Comp. Path. and Therap.*)

ARSENIC ON A GROWTH OF THE FETLOCK [*By H. Gray, M. R. C. V. S.*].—A thoroughbred mare was brought five years ago to the author for a fingerlike growth on the off hind fetlock. This was excised and the base well burned with the actual cautery. It soon reappeared much larger than before. Various caustics (such as sulphonol, nitric acid, chromic acid, chloride of zinc, bichoride and biniodide of mercury, iodine with and without carbolic acid), were used alternately with the actual cautery, but notwithstanding these the growth kept on recurring and enlarging, until it had become of such size as to interfere with the work of the animal. The whole fetlock had enlarged and was continuously struck by the other foot. The author then resorted to the use of an ointment of arsenic made of one drachm of white arsenic and one ounce of ung. picis Burgundy—a small portion of which was carefully rubbed on the centre of the growth every third day. After a few applications the tumor began to decrease and after three months of treatment finally disappeared.—(*Journ. of Comp. Path. and Therap.*)

OVARO-HYSTERECTOMY OF THE PREGNANT UTERUS [*By C. J. Rix, M. R. C. V. S.*].—This case relates the operation of ovaro-hysterectomy performed on a terrier bitch weighing 2½ pounds which had been mated with a large dog and had been in labor for about twelve hours. The uterus contained two large pups, one quite large, which had been much injured by the efforts made to deliver it, the other was taken and dried, wrapped in cotton wool and put in a warm place. Three hours later it was given to a cat which had recently had kittens. The bitch recovered without any trouble. The puppy was thoroughly attended to by its foster mother until it could be weaned. —(*Journ. Comp. Path. and Therap.*)

A HIGH TEMPERATURE [*By Harold Leeney*].—Whether a case of deferred parturient apoplexy, or sunstroke, or a mixture of both, that the author had to deal with he does not decide. An aged cow which had calved nine days previous was down and unable to rise. Her neck was crooked, her eyes staring, but she appeared to be fully conscious. The pulse was almost imperceptible and respiration too rapid to be counted. She had been exposed to the sun, which had been beating on her with tropical severity. The thermometer was introduced into her rectum on two occasions and registered 110°F. at the extreme top of the tube. With heart stimulants, spinal sedatives, laxatives and frictions, the cow recovered in two days.—(*Vet. Journal.*)

INHERITED MALFORMATION [*By J. J. Lodwick*].—This relates to a Welsh mountain ram which had covered a number of Welsh ewes and when slaughtered by the butcher was found to have only one kidney. His progeny which were afterwards slaughtered proved to be affected in the same way—they had but one kidney each.—(*Vet. Journal.*)

PROLAPSUS RECTI [*By J. H. Parker, M. R. C. V. S.*].—A Shorthorn yearling bullwhenever approached or disturbed in any way would strain and evert the rectum for about one foot and then suddenly draw it back again. Sometimes he seemed to improve, but soon had a relapse, and as at that time the rectal mucous membrane became diseased and bled at each prolapse, the animal being still in good condition, was sent to the butcher and slaughtered. At the post-mortem the left vesiculæ seminalis was found diseased, and behind it, above the root of the penis, close to the neck of the bladder, there was a cyst as large as a duck's egg containing brownish colored fluid. The left vas deferens was inflamed and the vesiculæ seminalis of the

same side was enlarged to about twice its normal size, containing a brownish colored fluid; it was connected with the cyst. On the floor of the cyst there was an elliptical-shaped orifice which the author thought was the left ejaculatory duct obliterated. All these conditions connected with the lower surface of the rectum suggest the idea that they were the cause of the straining and of the prolapsus.—(*Veterin. Record.*)

LAPAROTOMY AS AN AID TO DIAGNOSIS [*By F. Hobday, F. R. C. V. S.*].—Referring to an article on the same subject from the *Berliner Thierärzt. Woch.*, the author enumerates a number of cases where he resorted to the operation purely for diagnostic purposes or during the course of some operation or other: In horses and mares, 26 cases, including laparotomy for obstruction of the intestines, abdominal cryptorchidy, ovariotomy, radical operation for umbilical and abdominal hernia; cattle, 25 cases, for ovariotomy; dogs and cats, more than 200 cases, including oöphorectomy, ovariotomy, ovaro-hysterectomy, Cæsarian section, radical operation for hernia, enterotomy, gastrotomy, supra-pubic lithotomy, etc.; monkeys, one case of oöphorectomy; pigs, a number of cases of oöphorectomy.—(*Veterin. Record.*)

CORRESPONDENCE.

THE FIRE AT THE NEW YORK STATE VETERINARY COLLEGE.

ITHACA, NOV. 19, 1900.

Editors American Veterinary Review:

DEAR SIRS:—You have doubtless seen the report of our fire at this College, and I think it well that your readers should get an authoritative statement of the occurrence. Early in the morning of Nov. 13th the main (central) divisions of the laboratories of bacteriology and pathology, and histology and embryology were burnt out with all their valuable contents. Fortunately the research laboratories in the same subjects escaped, together with their contents. The basement, containing the heating plant, store rooms and special work rooms, escaped, also the first floor with the museum and offices, and the second floor, with the Flower library, periodical and reading room, part of the museum, the laboratories of physiology, materia medica and pharmacy, lecture room and offices. The east wing, 90 feet long, with amphitheatre, dissecting room, store room, preparation room, locker room, lavatories and the house for experimental animals remain unscathed, as do all the de-

tached buildings—groom's cottage, mortuary, bone room, operating room, and three clinical buildings.

Work was begun at once on the burnt out portion, and by Saturday night the débris had been cleared out, a roof put on, and the windows closed up, and this morning college work started as usual in all departments. The alcoves of the museum on the first floor are devoted to periodicals and reading, and to laboratory work in histology, on the second floor bacteriology takes the old periodical room, and part of the museum for a laboratory. The research laboratories which came so near going up in smoke can also be used.

The short course for practitioners, advertised to open January 3d, will be conducted as advertised and with ample facilities.

Yours very truly,

JAMES LAW.

PROMOTIONS OF VETERINARIANS IN THE BUREAU OF ANIMAL INDUSTRY FROM SEPTEMBER 1 TO NOVEMBER 30, 1900.

Dr. A. M. Adams, Clarinda, Iowa, from $1200 to $1400.

Dr. F. W. Ainsworth, Pittsburg, Pa., from $1200 to $1400, and placed in charge of station.

Dr. Boyd Baldwin, Chicago, from $1200 to $1400.

Dr. A. E. Behnke, Inspector in charge at Milwaukee, from $1400 to $1600.

Dr. Tait Butler, from $1200 to $1400, transferred from Chicago and placed in charge at Cudahy, Wis.

Dr. Thomas Castor, East Las Vegas, N. Mex., from $1200 to $1400.

Dr. H. A. Christmann, Washington, D. C., from $1200 to $1400.

Dr. W. Ross Cooper, Kansas City, from $1200 to $1400.

Dr. A. A. Holcombe, Chicago, promoted to travelling inspector, from $1200 to $1400.

Dr. Robert L. Kelly, East St. Louis, Ill., from $1200 to $1400.

Dr. Peter I. Kershner, Manhattan, Kansas, from $1200 to $1400.

Dr. John A. Kiernan, Boston, from $1200 to $1400.

Dr. F. B. McCall, Chicago, from $1200 to $1400.

Dr. John P. O'Leary, Buffalo, from $1200 to $1400.

Dr. Harry D. Paxson, Fort Worth, Texas, from $1200 to $1400.

Dr. George W. Pope, Supt. of Animal Quarantine Station at Garfield, N. J., from $1400 to $1600.

Dr. Frank S. Tufts, Chicago, from $1200 to $1400.

Dr. Harry N. Waller, formerly inspector in charge at Pittsburg, transferred to same position at New York and promoted from $1600 to $1800.

Dr. T. A. Geddes, stationed in England as inspector of live stock for importation.

Dr. R. W. Hickman, formerly inspector in charge at New York, transferred to Washington and placed in charge of the Miscellaneous Division of the Bureau.

SOCIETY MEETINGS.

MISSOURI VALLEY VETERINARY ASSOCIATION.

The twenty-fifth regular meeting was held in Kansas City October 29, 1900, with the following veterinarians present: Drs. W. R. Andress, R. Blanch, S. E. Bennett, F. F. Brown, R. H. Carswell, W. J. Fretz, John Forbes, B. F. Kaupp, R. C. Moore, N. B. Smith, S. Stewart, D. C. Hannawalt, Jas. Wilson, J. B. Wright, E. Lee, and about fifty veterinary students.

From 2 to 5 P. M. a very instructive surgical clinic was held in the operating rooms of the Kansas City Veterinary College, which included a variety of recent operations.

At 7.30 P. M. the meeting was called to order by the President, Dr. John Forbes, of St. Joseph. After roll-call and reading of minutes of previous meeting, Dr. S. Stewart, of Kansas City, chairman of the Legislative Committee, gave a good account of the work being done by that committee and by the committee of the Missouri Veterinary Medical Association towards securing legislation to regulate the practice of veterinary medicine in the State of Missouri. The report was accepted and the committee continued.

The following programme was presented:

Dr. S. E. Bennett, "Age of the Horse as Revealed by the Teeth."

Dr. S. Stewart, "Report of the 37th Annual Meeting of the American Veterinary Medical Association."

Dr. B. F. Kaupp, "A Report of the 9th Annual Meeting of the Missouri Veterinary Medical Association."

Drs. E. J. Netherton and C. E. Steele, "Reports of Cases."

A generous and spirited discussion was elicited by the papers.

The next meeting will be held in St. Joseph in December, 1900. B. F. KAUPP, D.V.S., *Sec., Pro-tem.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

At the last meeting of this society the following resolution was passed: "That the President be empowered to appoint Resident Secretaries, one in each county of the State to act in conjunction with the Legislative Committee." In obedience to this resolution President Bell announces the following appointments: *Albany*—W. H. Kelly, Albany; *Broome*—C. D. Morris, Binghamton; *Cayuga*—W. J. Hallock, Auburn; *Cattaraugus*—L. L. Bishop, Delevan; *Chautauqua*—Charles H. Jewell, Dunkirk; *Chemung*—Charles B. Potter, Elmira; *Chenango*—E. M. Casey, Oxford; *Clinton*—J. A. McCrank, Plattsburg; *Columbia*—H. B. Ambler, Chatham; *Cortland*—J. C. Stevens, Cortland; *Delaware*—W. H. Phyfe, Delhi; *Erie*—W. L. Baker, Buffalo; *Franklin*—H. D. Mayne, Malone; *Fulton*—W. W. Kennedy, Fulton; *Genesee*—Harry Sutterby, Batavia; *Herkimer*—E. B. Ingalls, Mohawk; *Jefferson*—John A. Bell, Watertown; *Kings*—E. B. Ackerman, Brooklyn; *Lewis*—F. D. Markham, Port Leyden; *Madison*—E. F. Bettinger, Chittenango; *Monroe*—O. B. French, Honeoy Falls; *Montgomery*—J. M. Darby, Fort Plain; *New York*—Robert W. Ellis, New York; *Niagara*—A. Crowforth, Lockport; *Oneida*—Wilson Huff, Rome; *Onondaga*—J. M. Henderson, Syracuse; *Ontario*—W. H. Salisbury, Clifton Springs; *Orange*—H. E. Clarke, Newburgh; *Orleans*—G. C. Kesler, Holly; *Oswego*—W. B. Switzer, Oswego; *Otsego*—V. L. James, Cooperstown; *Rensselaer*—H. McWhinnie, Troy; *Richmond*—James McKee, Stapleton; *Schenectady*—A. G. Wicks, Schenectady; *Schoharie*—W. J. Wadsworth, Cobbleskill; *Seneca*—J. M. Chase, Seneca Falls; *St. Lawrence*—Chas. Cowie, Ogdensburgh; *Steuben*—J. L. Ronan, Corning; *Suffolk*—R. C. Jones, Port Jefferson; *Tioga*—E. F. Vorhis, Owego; *Tompkins*—James Law, Ithaca; *Ulster*—T. F. O'Dea, Saugerties; *Warren*—D. S. Saylor, Glens Falls; *Wayne*—F. H. Nodyne, Sodus; *Westchester*—E. Latourell, Yonkers; *Wyoming*—Romanzo Perkins, Warsaw.

The following standing committees have been appointed for the ensuing year: *Committee of Arrangements*—W. L. Wil-

liams (chairman), James Law, C. D. Morris, Pierre A. Fish, and Carl W. Gay. *Legislation*—W. H. Kelly (chairman), James Law, W. L. Baker, C. D. Morris, and Roscoe R. Bell. *By-Laws*—E. B. Ackerman (chairman), J. W. Corrigan, and C. D. Morris. *Executive*—Roscoe R. Bell (chairman), George H. Berns, C. D. Morris, W. L. Williams, W. H. Kelly, and E. B. Ackerman.

SOUTH DAKOTA STATE VETERINARY MEDICAL ASSOCIATION.

In response to a call issued by certain members of the profession, the veterinarians of South Dakota met at eight o'clock P. M., Oct. 9th, 1900, at the Depot Hotel, Huron, S. D., for the purpose of organizing a State Veterinary Medical Association.

The meeting was all that could have been desired, both in point of attendance and interest shown by those present in the movement. Dr. J. W. Elliott was elected temporary Chairman, Dr. H. O. Sanford temporary Secretary, and Drs. Moore, Hicks, and Foster were appointed a committee to draw up by-laws to be approved by the members of the association.

The by-laws having been presented and approved, election of officers took place with the following results:

President—J. W. Elliott, V. S., Aberdeen.

Vice-President—D. A. Cormack, D. V. S., Watertown.

Treasurer—H. O. Sanford, M.D.C., Beresford.

Secretary—J. P. Foster, V. S., Selby.

Drs. Cormack, Hicks, and Moore were selected as a committee to frame suitable bills to be presented at the next session of the Legislature.

After discussing other matters of interest, the meeting adjourned to meet again in January, exact date and place to be decided upon by the President. J. P. FOSTER, *Secretary.*

NEWS AND ITEMS.

IF animals ever regret their actions, what does the kangaroo?

DR. J. F. DEVINE, of Rhinebeck, N. Y., has removed to Brooklyn, and has become an assistant in the practice of Dr. Roscoe R. Bell.

Is Dr. M. H. Reynolds, of Minnesota, preparing a history of veterinary science in America? He is collecting data for some good purpose. Why not adopt the suggestion?

THE veterinarians of South Dakota have organized an association and will endeavor to secure a practice act at the next session of the legislature.

DR. H. D. FENIMORE, of Knoxville, Tenn., has retired from the practice of veterinary medicine, and writes the REVIEW that there is an opening there for a practical veterinarian.

DR. S. S. SNYDER, of Cedarburg, Wis., has been appointed Resident State Secretary of the A. V. M. A. in place of Dr. G. Ed. Leech, of Milwaukee.

AT the sale of Hereford cattle at Kansas City, Oct. 23, the yearling bull Columbus XVII—adjudged the best bull in the sale—was sold at auction to Frank Rockefeller for $5050.

THE VETERINARY SERVICE ASSOCIATION seems to have subsided into "innocuous desuetude," as its efforts to corner practice in Greater New York have proven a failure. We have heard of no practitioner complaining of lost clients. Next.

DRS. WILLIAM SHEPPARD, Thomas G. Sherwood, and John M. Heard, all graduates of the Royal College of Veterinary Surgeons of England, were the official veterinarians of the last National Horse Show at Madison Square Garden.

THE recent automobile show held in New York attracted much attention and many new models of the lifeless machine were exhibited. As a consequence the National Horse Show was a greater success than ever.

DR. R. W. HICKMAN, B.A.I., for a number of years in charge of inspection at New York, has been ordered to Washington to assume charge of the Miscellaneous Division of the Bureau. In consequence the profession of Gotham loses a genial member, and New York University a valuable instructor.

THE library of the A. V. M. A., in custody of Librarian Williams, of the New York State Veterinary College, was domiciled in the building which was partially destroyed by fire on the 13th ult., but Dr. W. informs us that it came out unscathed, as did his private library.

THE Westchester County (N. Y.) Association has begun its crusade against illegal practitioners in its district, and all but one suspect are now in process of prosecution. An example worthy of emulation in every section of this and other States having adequate laws.

THE last meeting of the New York State Society having proven such a phenomenal success from every point of view, the President of that organization has reappointed the head of the Arrangements Committee of last year with most of the

members in anticipation that their past experience will enable them to even eclipse their great work of 1900.

DR. H. G. PATTERSON, of St. Joseph, Mo., has returned to take up his practice in that city after five months' service with the British government in the transportation of animals to South Africa. The doctor reports successful and pleasant voyages, and a jolly good time.

DR. H. E. RICE, of Little Rock, Ark.; Dr. D. G. Moberly, of Kansas City, Mo.; Dr. Ed. Makins, of Abilene, Kans.; Dr. H. C. Simpson, of Dennison, Iowa, and Dr. C. E. Monney, of Hiawatha, Kans., have journeyed to South Africa in the service of the British government.

"A COLLEGE WITHOUT A FACULTY."—A Nashville correspondent informs us that the editorial in the November number bearing the above title was absolutely true, and that we can now add to it that it is also a college without students, as but two young men have conceived the idea that they can obtain instruction without the aid of instructors.

DR. T. A. GEDDES, Chief of the Miscellaneous Division of the Bureau of Animal Industry, has been detailed as a special inspector and ordered to Great Britain to inspect cattle intended for importation into the United States. This foreign inspection will enable importers to purchase stock subject to such inspection, and will not require the tuberculin test upon arriving at quarantine in the United States.

RABIES IN HORSES.—Dr. S. Stewart, Dean of the Kansas City Veterinary College, writes to the REVIEW, under date of November 21, as follows: Within the last 20 days two cases of rabies in horses have been brought to the college hospital. Careful inquiry reveals that these horses were exposed to an attack of a dog which presented the classic symptoms of rabies prior to its destruction.

THE New York and Chicago horse shows were the scenes of the most enthusiastic rivalry between the contestants and of keen appreciation by the immense audiences. The visitors witnessed the finest equine specimens of the world and the enthusiasm ran high. To look over the beautiful arena, animated by the flower of the American stud, was a privilege as great as the occasion was inspiring to the lover of the horse.

"THE BREEDER'S GAZETTE" has recently been indulging in some rather harsh criticism of the veterinarian, excited by the tuberculosis laws of Illinois which were passed at the last session of the legislature at the instigation of the profession of

that State, in which the poll-axe figures somewhat prominently. Dr. Samuel G. Hendren, of Marion County, Indiana, had a letter in the issue of the *Gazette* for Nov. 14 in protest of that journal's strictures. In some foot-notes the *Gazette* disavows any such purpose, and remarks that it has always appreciated the value and high character of the profession of the country, and has ever exerted itself to advance its interests.

OUTBREAK OF TEXAS FEVER IN OHIO.—Dr. J. C. Burneson, State Veterinarian of Ohio, writes the REVIEW as follows: "An outbreak of Texas fever was discovered in Lake County, Ohio, The disease was carried to that locality by Texas cattle, purchased in the West by a butcher. Several cattle escaped from his pens, roaming about the neighboring farms. The greatest loser to date is Mr. S. M. Whiting, he having lost three valuable Holstein cows before my arrival, and one which would soon die was killed for the purpose of antopsy. Six others were in very bad condition, among them a valuable registered Holstein bull. The latest devised means of suppression were immediately instituted and we are now awaiting results."

THE "HIGH-STEPPING DOPE."—The late New York horse show threatened to unearth a scandal by investigating an exhibitor's methods of producing knee action in his horses. The suspicion grew out of the peculiar conduct of his entries in the ring and was further strengthened by a strong odor of ammonia emanating from the stalls occupied by these horses. The official veterinarians were sent upon an investigating tour, and they reported that the explanation furnished by the stable was to the effect that the ammonia was contained in a leg wash applied for soothing and antiphlogistic purposes, and was only one of a number of ingredients, of which witch hazel, alcohol and arnica were the others, and that the ammonia was in such small proportion as to be devoid of irritating effects. The veterinarians were disposed to accept this statement as correct, but thought the odor of ammonia was stronger than was justified by the small quantity claimed. The gentleman owner thinks the association owes him an apology for the reflection. The directors have clearly the right to investigate anything which may seem to them suspicious, and it is their duty to do so. The fact that the suspicion was not confirmed is equivalent to an exoneration. Veterinarians do not believe that it is a practice among a certain class of horsemen to rub the legs of their horses with irritants to cause them to lift their feet high, showing knee action and animation. It is impossible that an irri-

tant could be applied which would have such effect while the horse was in action, and fail to affect him while standing at rest for inspection by the judges.

SOUTHERN VETERINARIANS HONORED.—At the annual convention of the American Veterinary Medical Association, held at Detroit, Mich., during the first week of September, Dr. Tait Butler, late Professor of Veterinary Science in the Mississippi A. & M. College, and veterinarian to the agricultural experiment station of our neigboring State, was elected president of that national association for the ensuing year, and Dr. W. H. Dalrymple, M. R. C. V. S., of our own State University and experiment station, had the honor of second vice-president conferred upon him, which means that he represents the South in this important national veterinary society. This is the first time that the Southern States have received representation in this association, and Dr. Dalrymple the first member to be elected vice-president to represent them. Dr. Dalrymple has always been an enthusiastic devotee to the cause of veterinary science, and his able efforts in this direction are worthy of the honor bestowed on him. The treatment of our domestic and farm animals is developing day by day, and the people of the South are beginning to realize that the science which serves to prolong life and relieve suffering in the brute creation, on which we are so dependent, is scarcely of less importance than that which treats the ills of man. The exalted rank attained by representatives from southern institutions in these inter-state conventions of veterinarians is the most patent and manifest example of the high standard of efficiency which this science has gained in the South's great State colleges and other institutions of learning.—(*Truth, Baton Rouge, La.*)

VETERINARY MEDICAL REGISTER OF THE STATE OF NEW JERSEY.—Under authority of the Veterinary Medical Association of New Jersey, Dr. Wm. Herbert Lowe, of Paterson, has issued a little pamphlet bearing this title, which presents a copy of the Certificate of Incorporation of the Society, the law governing the practice of veterinary medicine in that State, and a complete list of every practitioner registered in the Clerk's office of every county of New Jersey. The compilation of this list has been a large contract, as the author has endeavored to follow up the history of every man who placed his name upon the registry books. The information furnished includes the name of the practitioner; address when registered; the college from which his diploma was obtained, if possessed; the date of

such diploma; date of registry; and remarks (which includes deaths, removals, and other data). In running through the "Register," we find the names of 402 practitioners, of whom 282 are graduates and 120 are "existing practitioners;" 96 hold diplomas of the American Veterinary College, 54 of the New York College of Veterinary Surgeons, 36 of the University of Pennsylvania, 28 of the Ontario Veterinary College, 12 of Columbia College (defunct), while 56 hail from various foreign and domestic institutions. Of this formidable array of veterinarians, many are registered in more than one county, a great many have removed to other States, 28 are deceased, and some are devoting their energies to other vocations. The general distribution of the "Register" among the profession of the State will probably result in the correction of many unavoidable errors, and a second edition will be more complete. This little pamphlet is of much more importance than appears at a casual glance, as it will at once enable the members of the profession to determine just who has the legal right to practice, and it will greatly assist those having the prosecution of offenders in charge. Cape May County reports that not a single veterinary surgeon is registered in that county.

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